Whittington ESL User Handbook

The status of this Protocol is **Active**

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This document and all associated documents have been prepared and authorised electronically. All signatories and dates are traceable through Q-Pulse and can be found at the end of this document.

THIS DOCUMENT MUST BE READ AND UNDERSTOOD BY STAFF USING IT AND DOCUMENTED EVIDENCE PROVIDED THEREOF

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1 Introduction

1.1 Introduction

1.1.1 Health Services Laboratories Analytics is the legal entity having the responsibility for providing pathology services and is legally accountable for the reports generated by these processes. HSL operates its services in compliance with current United Kingdom Accreditation service (UKAS), Good Clinical Practice (GCP), Good Manufacturing Practice (GMP), Human Tissue Authority (HTA) and Blood Safety and Quality (BSQR) standards, regulations and guidelines as appropriate.

1.1.2 The aim of this document is to describe the investigations offered by the laboratory, along with instructions and guidance on pre-analytical handling of samples, their transport to the laboratory and how results are issued.

1.2 Location of Services

1.2.1 HSL operate a Hub and Spoke model, with the Whittington Essential Services Laboratory (ESL) acting as a spoke, feeding into the Hub, which is the Halo Building.

1.2.2 The address for the Whittington ESL site is:

Whittington Essential Services Laboratory,
Level 5, K block
Magdala Avenue
London
N19 5NF

1.2.3 See the table below for the location of each discipline

Department	Location
Blood Transfusion	Whittington ESL.
Diagnostic Haematology, Routine Coagulation, Clinical Biochemistry incorporating Central Pathology Reception and POCT	Whittington ESL
Molecular Cytogenetics	5th floor Halo Building
Toxicology special Biochemistry	Manual Blood Sciences 2nd floor Halo Building
Proteins Special Biochemistry	Manual Blood Sciences 2nd floor Halo Building
Special Haematology	2nd floor Halo Building Manual Blood Sciences
Flow Cytometry	2nd floor Halo Building, Manual Blood Sciences

Department	Location
Special Haemostasis (Haemophilia) Laboratory	1st floor, RFH Medical School building next to the Peter Samuel Hall, Hampstead site.
Haemophilia Molecular Genetics	Level 5 Halo Building
Immunology - Core Laboratory	Level 2 Halo Building.
Microbiology	Registrars and Consultants are based within the Whittington Trust. The laboratory is based at 3rd and 4th floors Halo Building - Infection Sciences
Virology - Serology	Whittington ESL.
Virology – Core Laboratory (Halo building, Euston Road)	Level 2 Halo Building. (pending service transfer 17/02/2024)

1.3 Working Hours

1.3.1 Routine working hours are 09:00 - 17:30 Monday to Friday.

1.3.2 The ESL laboratory operates a 24/7 service, however, has reduced staffing levels outside of routine hours.

1.3.3 The Halo core laboratories out of hours service varies by department, they may also run an extended or 24/7 service.

1.3.4 For full details of operating hours and contact details (both laboratory and clinical) please see the relevant section of this document or refer to the HSL website for the Core laboratories.

2 Instructions for Users on collecting, labelling, packaging and transporting specimens

2.1 General guidance on preparing patients

2.1.1 It is essential that the person responsible for preparing the patient and collecting the specimen ensures they check the requisition form for the requested tests and

- **Explain the reason for the specimen being taken**
- **Correctly determine the identity of the patient** prior to collection by asking the patient to verbally provide their name and date of birth and confirm this by checking their details on the request form or their wristband as appropriate.
- **Check the patient meets particular conditions prior to sample collection** such as
  - Pre-determined times or at timed intervals

- Fasting
- Cessation of medication

- **Obtain consent from the patient** see section 2.1.2 below
- **Assemble the specimen collection bottles and supplies** e.g. sharps bin, needles, cotton wool and alcohol swab gloves etc. needed to carry out the procedure within safe and easy reach
- **Wear gloves** and collect the specimen and label the specimen container as outlined in sections 2.2 and 2.3
- Package and transport the specimen containers as outlined in section 2.6

2.1.2 Consent

Patients presenting themselves with a request form at the point of sample collection or providing a sample themselves to their healthcare provider will be viewed as providing implied consent.

2.1.2.1 Consent for HIV testing

Patient consent is required for HIV testing, doctors must document that they have gained patient consent before sending tests to the laboratory (the laboratory assumes patient consent, if HIV test is requested by doctor). If a patient is unconscious and HIV testing is required, this information must be put in the clinical details on the request.

2.1.2.2 Genetic testing for inherited bleeding disorders

- Examinations for genetic testing for inherited bleeding disorders require the requestor to provide detailed patient and family information and written consent.
- Please use the following consent form and information: - http://www.ukhcdo.org/docs/Genetic%20testing%20consent%20form.doc

2.2 General guidance on specimen collection

2.2.1 A properly collected specimen is critical to quality test results. Ensure

- The correct specimen type is collected
- The correct amount is collected
- The specimen is collected in the right container with any necessary additives (see section 2.2.3 below)
- The specimens are collected following safe working practices
- Ensure that there is no contamination from external sources when collecting microbiology and virology samples

- Clean surgical instruments and surgical trays must be used when collecting Histopathology samples
- The container is securely sealed and labelled (see section 2.6 below)

See the relevant section of this document for further information. Additional information specific to Microbiology and Virology swab sample collection are located in those sections of this document.

2.2.2 Urine Collection

Collected in a sterile container with close fitting lids to avoid contamination and spillage and always keep timed urine collections cool during the collection period.

- **For Microbiology, send in boric acid container to preserve quality and minimise contaminant overgrowth.**
- **For Biochemistry use a plain container, unless otherwise stated. Do not use boric acid.**

2.2.2.1 Random Urine Collection

Random collection of urine taken at any time of day with no precautions regarding contamination may be dilute, isotonic, or hypertonic and may contain white cells, bacteria, and squamous epithelium as contaminants. In females, the specimen may contain vaginal contaminants such as trichomonads, yeast, and during menses, red cells.

2.2.2.2 Early Morning Urine (EMU)

Early morning collection of urine before ingestion of any fluid is usually hypertonic and reflects the ability of the kidney to concentrate urine during dehydration, which occurs overnight. If all fluid ingestion has been avoided since 6 p.m. the previous day, the specific gravity usually exceeds 1.022 in healthy individuals. This is the appropriate sample when investigating extra-pulmonary tuberculosis.

2.2.2.3 Clean-Catch or Mid-Stream Urine (MSU)

Clean-catch, midstream urine specimen collected after cleansing the external urethral meatus. A midstream urine is one in which the first half of the bladder urine is discarded and the collection vessel is introduced into the urinary stream to catch the last half. The first half of the stream serves to flush contaminating cells and microbes from the outer urethra prior to collection.

2.2.2.4 Catheter Urine

Catheterisation of the bladder through the urethra for urine collection is carried out only in certain circumstances and as a procedure risks introducing organisms and traumatizing the urethra and

bladder, thus producing iatrogenic infection or haematuria. It is important to note that a urine sample is not required when first catheterising a patient unless it is indicated clinically.

2.2.2.5 Suprapubic trans-abdominal Urine

Suprapubic transabdominal needle aspiration of the bladder when performed under ideal conditions provides the least contaminated sampling of bladder urine. This is a good method for infants and small children.

2.2.2.6 Nephrostomy urine

Sample from a nephrostomy tube placed in the renal pelvis

2.2.2.7 Bladder / cystoscopy urine

Bladder / cystoscopy urine is obtained during temporary insertion of a sterile catheter or cystoscope into the bladder.

2.2.2.8 24 Hour Urine Collection

08:00 am - Empty bladder and discard urine. Start the 24-hour collection (Save every drop of urine). Finish the 24-hour urine at 08:00 am on the next morning by emptying bladder into the 24-hour container.

2.2.3 Blood sample collection

Blood samples are used by all laboratory disciplines, the following is general guidance to follow when collecting blood. Some tests have specific additional requirements, these instructions will be flagged at point of ordering both on ICE and on the request form, and can be found in the relevant disciplines section in this document.

2.2.3.1 Order of Draw.

Blood tubes must be drawn in the correct order to prevent carryover of any additives from one tube to the next, the table below shows the order of draw. If order of draw is not followed there is a risk of carrying over additives, these can often have a significant impact leading to erroneous results and test being cancelled. Please refer to the following Tube Guide for order of Draw.

2.2.3.2 Mixing of Samples.

Blood tubes should also be mixed by inversion following collection to ensure the blood is adequately mixed with any tube additive. If samples are not mixed there is a risk of clots forming in samples with anticoagulants, or the sample not clotting correctly for those with a clotting activator. If mixing is not

done there is a risk of erroneous results or of the tests being cancelled. Please refer to the following Tube Guide for mixing instructions.

BD Vacutainer®

BD Life Sciences - Preanalytical Systems

Tube Guide & Recommended Order of Draw*

*Clinical and Laboratory Standards Institute (CLSI) Guidelines GP41-A6 (formerly H3-A6, 6th Edition)

Whittington Health NHS Trust

Ensure full tube for multiple tests and one sample for each department. Blood samples should be taken in the following order:

Cap Colour	Cat. No.	Tube Type	Determinations	Special Instructions
	Cat. No. 442023/442021 Draw Volume 8-10ml	Blood Cultures		Aerobic followed by anaerobic, if concerned about the volume required contact Microbiology.
	Cat. No. 442206/442288 Draw Volume 8-10ml/1-5ml	Blood Cultures		Fungal and TB bottles are available from Microbiology. Not suitable for air-tube transport.
	Cat. No. 363095 Draw Volume 2.7ml	Sodium Citrate (light blue top)	Coagulation tests, heparin and warfarin control	Under-filled samples cannot be processed. Mix 3-4 Times
	Cat. No. 367837 Draw Volume 6ml	Serum (red top)	Antibiotics, virology, immunology and serology	Mix 5-6 Times
	Cat. No. 367954 Draw Volume 5ml	Serum Gel / SST™ II (gold top)	**Biochemistry** - Routine chemistry, hormones, iron studies, drug levels including anticonvulsant levels **Haematology** - B12, folate, ferritin	Mix 6 Times
	Cat. No. 367883 Draw Volume 4ml	Lithium Heparin (dark green top)	Insulin	Bring immediately to the laboratory. Lithium Heparin tubes available from Blood Sciences. Mix 8-10 Times
	Cat. No. 368860 Draw Volume 4ml	EDTA (lavender top)	**Haematology** - FBC, blood films, ESR, sickle, malaria, haemoglobinopathy screens, G6PD screen and assay, GF tests **Biochemistry** - HbA1c, ammonia **Serology** - Viral loads	Please bring malaria and ammonia samples immediately to the laboratory. Mix 8-10 Times
	Cat. No. 367941 Draw Volume 6ml	Crossmatch (pink top)	Blood group and save, and crossmatch	Samples must be labelled by hand with patient's full name, date of birth, hospital number, date and time, and signature of the person who took the blood. Mix 8-10 Times
	Cat. No. 368380 Draw Volume 6ml	Trace Element (royal blue top)	Zinc, copper and selenium	Trace metal tubes available from Blood Sciences. For all chromium and cobalt requests, please contact laboratory on x5775 to arrange collection of the specilist sampling tubes. Mix 5-6 Times
	Cat. No. 368920 Draw Volume 2ml	Fluoride Oxalate (grey top)	Blood glucose, alcohol and lactate	Please bring lactate samples immediately to the laboratory. Mix 8-10 Times

Determinations and Special Instructions contained within this guide have been provided by the above named institute and are not BD recommendations or instructions for the BD products described. Please consult your organisation's guidelines or contact BD should you have any questions.

IMPORTANT MIXING GUIDELINES

All BD Vacutainer® tubes require immediate mixing following collection. Insufficient mixing can result in inaccurate test results and the need to re-draw. Correct mixing technique is to gently invert (180° and back) each tube the recommended number of times shown on the right hand side of the table.

For any specialist test information, contact the laboratory.

BD

BD Life Sciences - Preanalytical Systems
t: 01865 781529

2.3 Guidance on Specimen Labelling.

2.3.1 Each specimen container:

- Must be labelled at the time of collection i.e. next to the patient when the sample is taken and not prior to, or remotely from the patient after collection

  Note: NEVER label the specimen bag

  Note: The Laboratory will discard a specimen if it is received unlabelled
- Must have a label whose information matches the information on the accompanying request form

  Note: Specimens will not be accepted if the information does not match
- Must have no more than one label placed on it if pre-printed labels are used.
- MUST NOT have the request form wrapped around it as a specimen label. This is not acceptable
- A label that does not contain the required information or which has illegible information will be considered to be improperly identified and will result in delays or a decision not to process the specimen. In these instances a repeat specimen will be requested

  Note: Always label the specimen clearly with the name, hospital number, date of birth and collection date and time

2.3.2 Blood Transfusion samples - Specific instructions.

- Collect and label samples from one patient at a time.
- Check the identity details on the patient wristband matches the identity details on the request form
- The samples **MUST** be labelled by hand. **DO NOT** label the samples with EPR generated barcode or addressograph labels
- Label the sample at the patient's bedside using information from the patient's wristband – Write the patients full name, date of birth, hospital number. Where the patient is able to communicate they should be asked their full name and date of birth to confirm details are correct
- Write the date & time of collection and signature of the person who took the blood.
- Phlebotomists covering wards need to ask a second person to check patient details written on the sample before the sample is sent to the laboratory.

2.3.3 Minimum labelling Requirements

2.3.3.1 information required on the specimen label is three unique identifiers that MUST match the information on the request form. These should be:

- Patients Full name (Surname/family name and first name)
- Hospital number (or NHS number)
- date of birth

2.4 Guidance on Completing Request Forms

2.4.1 A completed request form (electronic or manual) must accompany each patient sample with the details on the specimen label matching the details on the corresponding request form.

2.4.2 Note down the collection date and time on the request form

2.4.3 Paper request forms should include the signature/initial of the person collecting the samples confirming

- They have verified that the patient details on the label matches the patient details on the test requisition
- The specimen has been drawn

2.4.4 Electronic requesting can be done directly in ICE, this will automatically generate the request form.

2.4.5 All requests should be completed with all relevant information including:

- NHS number (or hospital number)
- Patient name (Last name and First name)
- Date of birth
- Ward or clinic
- Requesting doctor with contact number the signature, bleep and/or contact number of the requesting doctor must also be completed.
- Clinical details
- Tests requested
- Date & time sample taken
- Consultant
- Date and time for crossmatched blood to be ready
- LMP (last menstrual period) - where appropriate
- Consent (where appropriate)

2.5 High risk samples

2.5.1 All patient samples received within the ESL laboratory are treated as high risk (under universal precautions) however, best practice dictates that samples from certain patient groups or disease processes (some listed below), should have their 'high risk' status noted on the request form.

2.5.2 This is best done by giving full medical history in the clinical details section of the request. Please indicate this to the forefront of the clinical details.

2.5.3 The provision of sufficient information on Specimen Request forms to staff in Clinical Diagnostic Laboratories is essential to enable them to apply the correct safety measures to control the risk of infection.

2.5.4 Since any request exposes laboratory personnel to some risk only request those tests which are really necessary.

2.5.5 High risk samples are defined as coming from the following groups: -

- Those with known or suspected CJD
- Those with known or suspected typhoid fever
- Those with known or suspected Brucellosis
- Suspected meningococcal meningitis
- Faeces from patients with known / suspected typhoid, E coli 0157, dysentery
- Sputum or bronchial washing/lavage from suspected or known TB
- Pyrexia of unknown origin (PUO) – if patient has been abroad
- Suspected diphtheria
- Patients with suspected Histoplasma, Coccidioides or other dimorphic fungal infections.
- Patients with suspected viral haemorrhagic fever (VHF) infection (see below for specific instruction).
- Patients with suspected avian influenza viruses or other newly isolated human pandemic viruses.

2.5.6 Please refer to the following HSE guidance for the full Approved List of Biological Agents: http://www.hse.gov.uk/pubns/misc208.pdf

2.5.7 ?VHF Samples

2.5.7.1 Please note that for any patient suspected of being infected with a viral haemorrhagic fever (VHF) e.g. Ebola Virus Disease (EVD) or returning from travel to endemic areas with fever, consultation should be sought from the Infectious Diseases (ID) team via switchboard on the patient assessment.

2.5.7.2 By definition, samples from these patients are considered to be extremely high risk (Hazard group 4 pathogens) and dictate a higher level of handling precautions.

2.5.7.3 The laboratory mush be informed before any specimens from a potential VHF patient is sent. This includes close contacts of the patient where specimens may also be sent for testing. Please contact the following in the laboratory:

- 020 7288 5088 for Microbiology (Out of hours 07920211488).
- 020 7288 5775/5776 For Biochemistry (Bleep 2626 between 8pm and 9am)
- 020 7288 5775/5776 for Haematology (2686 between 8pm and 9am).

2.5.7.4 Specimens transported to the laboratory should be labelled as "High Risk" and contained in a leak proof primary receptacle (the sample container) that is held within a sealed leak proof bag with absorbent material, cushioning material such as bubble wrap and transported in a rigid, leak-proof secondary container. A Biobottle inside its cardboard outer box is recommended.

2.5.7.5 Specimens should be accompanied by a request form that gives complete information as to the current risk assessment classification. The form should not be in contact with the specimen.

2.5.7.6 Pneumatic tube systems must not be used for transport of Category A specimens.

2.5.7.7 Samples should be handed directly to lab staff (retained in packaging) with verbal confirmation that these are ?VHF samples.

2.5.7.8 Please refer to the Trust guidance for full instruction on the Management and Control of Viral Haemorrhagic Fevers - https://whittnet.whittington.nhs.uk/document.ashx?id=4970

2.5.8 ?CJD / Prion samples.

2.5.8.1 The laboratories are unable to process CSF samples containing CJD or other prions without prior arrangement. The receiving laboratory must be informed in advance of any sample being sent to them. The sample must be clearly labelled. Each laboratory has its own protocol for dealing with specimens. It is unacceptable to send a specimen on such patient with CJD and Other Transmissible Spongiform Encephalopathies without informing the laboratory in advance.

2.6 Guidance on specimen packaging and transport

2.6.1 Hospital requirements for packing and transporting specimens to the Laboratory

2.6.1.1 Place the labelled specimen container in a plastic specimen bag which is available on the Wards, in the Clinics and from central stores, and seal.

Note:

- Each specimen bag must only contain samples from one patient (DO NOT mix patient samples)
- For ease of sample processing in the laboratory it is advisable to place each discipline sample in a separate sample bag for the same patient, e.g. one bag for Microbiology and one bag for Blood Sciences.

2.6.1.2 Place the matching request form in the outside pouch of the bag.

2.6.1.3 Always send the specimen promptly to the laboratory or the collection point

2.6.1.4 There are two ways specimens can be sent to the Laboratory. For guidance on the most appropriate means of transporting specimens please see below

2.6.2 Delivery using the pneumatic air chute system

2.6.2.1 Some specimens **MUST NOT** be sent via the air chute because this will affect the test result. For guidance see the below table

Routine Haematology, Blood Transfusion and Immunology	All samples can be sent via the air chute
Cytopathology or Histopathology	**No samples must be sent via the air chute**, including: - Aspirates and tissue biopsies Any sample collected into formalin
Clinical Biochemistry	The following samples must NOT be sent via the air chute **Samples for Ammonia or Blood Gas** **CSF and Urine** (universal or sterile pot)
Virology & Microbiology	None of the following samples (in universals or pots) must be sent via air chute: - **Biopsies** **CSF** **Bone marrow or Fluid samples**
Haemophilia (Specialist coagulation) - **Sample** Three 2.7mL Citrate Blood sample (Light Blue top), one red clotted top and one 4.5 mL EDTA.	The below Specialist coagulation samples must not be sent via the air chute and should reach the laboratory within two hours of venepuncture Note: Samples for **Platelet studies** (aggregometry, and platelet nucleotides) and **whole blood assays - PFA-100, and ADAMTS-13** must be hand-delivered to the laboratory immediately after collection. **Thrombophilia Screen**

One 4.5 mL EDTA	**Factor V Leiden and Prothrombin Gene**
Three 2.7 mL Citrate Blood sample (light blue top).	**Haemophilia Screen**
Two 2.7 mL Citrate Bood sample (light blue top)	**Anti-Xa Assay**
One 2.7 mL Citrate Blood sample (light blue top)	**AdAMTS-13**
Two 2.7 mL Citrate Blood sample (light blue top)	**PFA-100**
One 2.7 mL Citrate Blood sample (light blue top)	**HIT Screen**

2.6.2.2 Where samples can be sent ensure you: -

- Place the specimen bag into a pod.

  Note: Specimens that are not sent in a pod will break and leak
- Close the pod securely and place in the station

  Note: in the event a carrier is visibly defective e.g. the lid will not close or the housing is cracked, please **DO NOT** use. Remove any defective carriers from circulation and inform the Estates team so that they can organise for replacement carrier(s) to be obtained for the relevant clinical area
- Enter the destination code 010
- Press: Send.

2.6.2.3 In the event of a spillage, breakage or loss of samples in the air tube system contact the Estates Department and log this as an incident on DATIX

2.6.2.4 In the event of temporary unavailability of a PTS sending station use the nearest accessible station and report the fault to the Estates team. In the event of an extended loss of PTS inform the clinical site team and arrange for sample collection via local portering services

2.6.3 Delivery in person (includes Hospital porters)

2.6.3.1 Clinical material is potentially hazardous to you, other staff, patients and visitors to the Trust

2.6.3.2 Place the specimen in a leak proof sealed plastic biohazard bag designed for specimen transport and deliver as soon as possible to Specimen Reception

2.6.3.3 In the event of a spillage or breakage

- DO NOT touch or remove the specimen from the carrier

- DO NOT allow anyone else to touch or remove the specimen
- Take it to specimen reception who will deal with it appropriately.
- Ensure the duty supervising porter is informed of any spillages/breakages, who should inform the originating department.
- Wash your hands. Remove contaminated clothing and have it cleaned in accordance with the Trust Laundry Policy as soon as possible. Contact the Infection Control Team if you are unsure of what to do.

2.6.3.4 Note: some tests have specific handling instructions, such as transportation in an incubated flask or on ice or must reach the laboratory in a certain time. Please refer to the individual test collection guidelines for any special instructions. Special instructions will also be flagged at the point of ordering the test on ICE.

2.6.4 External User (GPs, community clinics etc.) requirements for packing and transporting specimens to the Laboratory

2.6.4.1 It is the responsibility of the requestor to comply with ADR (Carriage of Dangerous Goods by Road) regulations ensuring samples are packaged to meet these regulations.

2.6.4.2 It is expected that diagnostic samples sent to the laboratory will be classified as category UN3373, Biological Substance, Category B and should be packed according to Packing Instruction PI650. If there is any concern that the material being sent does not meet UN3373 (including most category 3 and 4 pathogens) the laboratory must be contacted for advice before sending.

2.6.4.3 The transport of pathology samples from External locations to Whittington ESL is provided by TDL Collect.

2.6.4.4 Place the labelled specimen container in a plastic specimen mini-grip bag and seal.

2.6.4.5 Each specimen bag must only contain samples from one patient (DO NOT mix patient samples).

2.6.4.6 Place the matching requisition in the outside pouch of the bag.

2.6.4.7 When the courier presents you with a Diagnostic substances UN3373 transport bag or box, place the individually packed specimens into the secondary transport bag/box and seal. Note: all secondary transport bags contain a large sheet of absorbent material to contain the specimen in the event of a leak – please DO NOT discard this.

2.6.4.8 Ensure the secondary bag/box is sealed before they leave your premise

3 Whittington ESL Services

3.1 Introduction

3.1.1 The Essential Services Laboratory at the Whittington Hospital has the facilities to provide any on-site testing which has been deemed essential for immediate patient care, along with the receipt and booking of all other pathology work and subsequent transfer to the Halo core laboratory.

3.1.2 Sections 4,5,6,7 and 8 details the testing undertaken on site at the ESL, with the subsequent sections (section 9 onward) detailing services at the Core laboratory.

3.2 Contact Details and Key Personnel

3.2.1 The laboratory helplines can be reached via the following telephone numbers during routine working hours, these can be used for requesting additional investigations, requesting results or other non-clinical queries:

- Blood Sciences Sample Reception 020 7288 5775 / whh-tr.Pathology@nhs.net
- Microbiology/Virology Sample Reception: 020 7288 5088/ whh-tr.Pathology@nhs.net

3.2.2 Outside of routine hours please contact the labs directly on:

- Biochemistry - Bleep 2626 (between 8pm and 9am only)
- Haematology - Bleep 2686 (between 8pm and 9am only)
- Blood Transfusion - Bleep 2686 (between 8pm and 9am only)
- Microbiology/virology - 07920211488 (sample reception)

3.2.3 For any clinical queries, please select the most relevant person from the list below.

3.2.4 Details for the key laboratory personnel are shown below:

ESL key personnel (Clinical)	Contact details
Dr Ali Rismani Consultant Haematologist	07881821762 a.rismani@nhs.net
Dr Emma Drasar Consultant Haematologist	020 7272 3070 ex 5033 e.drasar@nhs.net
Dr Ryan Mullally Consultant Haematologist responsible for Blood Transfusion	0207 288 5791 ryanmullally@nhs.net
Haematology SpR Rotational SpR cover for blood transfusion	09.00 -17.00 0207 288 5756 / 07827294479 Outside these times call Haematology SpR via switchboard.

ESL key personnel (Clinical)	Contact details
Transfusion Practitioner	jamilla.koshoni@nhs.net 0207 288 5192 bleep 2953
Dr Eun Ji Kim Consultant in Chemical Pathology and Metabolic Medicine Clinical Lead for Biochemistry	Eun.kim@nhs.net 020 7794 0500
Duty Biochemist, Clinical Biochemistry	OOS - Request Via Switchboard Duty.biochemist@hslpathology.com
Dr Michael Kelsey Microbiology Consultant.	020 7288 5082 michael.kelsey@nhs.net
Dr Juie Andrews Infection Consultant	020 7288 3894 julie.andrews6@nhs.net
Dr Ana Garcia Mingo Infectious Diseases and Microbiology Consultant	020 7288 3346 ana.garciamingo@nhs.net
Dr. Magdalena Dziadzio Consultant Immunologist	07745 946 772 magdalena.dziadzio@nhs.net

ESL key personnel (Laboratory)	Contact details
Chris Wilson ESL Laboratory Head of Department	07806557818 Chris.Wilson@hslpathology.com
Sam Marston Lead BMS Blood transfusion, HSL Scientific Lead for Blood Transfusion	0207 288 3845 Samantha.marston@nhs.net
Liz Mullins Lead BMS Routine Haematology	0207 288 5043 Liz.mullins@nhs.net
Deirdre O'Flaherty Lead BMS Clinical Biochemistry	0207 288 5043 Deirdre.OFlaherty@hslpathology.com
Reeya Sudra Quality Manager, Blood Sciences	07407713477 Reeya.Sudra@hslpathology.com
Imran Ali Point of Care Testing Manager	0207 288 5043 imran.ali31@nhs.net
Stewart Morton RRL Specimen Reception Manager	0207 288 5043 stewart.morton2@nhs.net

4 Biochemistry

4.1 Biochemistry Service

4.1.1 The Biochemistry Department at the Whittington ESL offers a wide range of investigations including general chemical pathology, endocrinology and therapeutic drug monitoring. More specialised investigations may be sent to reference laboratories.

4.2 Enquiries and Clinical Advice

4.2.1 General enquiries should be made on our office number 020 7288 5775. Many questions can be dealt with by office staff.

4.2.2 A clinical scientist is available during routine hours for more complex and clinical enquiries. They will be happy to advise on result interpretation and the selection of investigations. Please contact them via the Ext.5046 or by email to Duty.Biochemist@hslpathology.com.

4.2.3 Out of hours the on-call biochemist is available for urgent clinical queries, they can be contacted via the hospital switchboard.

4.2.4 We recommend the following website for further details on laboratory tests: http://www.labtestsonline.org.uk/ this website is also suitable for patients wishing to learn more about their tests.

4.3 Urgent Requests

4.3.1 Most tests can be prioritised in exceptional circumstances: please contact the laboratory in advance of sending the sample or bring the sample to the lab by hand and inform the lab staff that the request is urgent, when dropping off an urgent sample please ensure the urgent sample log is completed at Sample Reception.

4.4 Out of Hours Service

4.4.1 The ESL laboratory operates 24/7 however outside routine working hours the laboratory is covered by a single member of staff and requests should be restricted to those tests affecting immediate patient management. Out of Hours the lab can be contacted by bleeping 2626.

4.4.2 The following tests are normally available out of hours:

- U&E, Creatinine, Glucose, Blood Gases, Amylase, Osmolality, LFTs, Bone Profile, CRP, Ammonia, Lactate, Magnesium, Conjugated Bilirubin (neonates only), CSF Glucose and Protein, Troponin T.
- Urine Sodium/Potassium/Osmolality.
- Salicylate, Paracetamol, Alcohol, Carboxyhaemoglobin, Lithium, Iron. Other toxicology samples may be saved. Lithium and Iron are available only in cases of suspected overdose.

- CSF Xanthochromia requests are sent to a referral laboratory during routine hours only, Mon-Fri.

4.4.3 Other tests may be available on discussion with the on-call Biomedical Scientist or on-call consultant Biochemist.

4.5 Results

4.5.1 Results are available to enquiry on Sunquest ICE within about 5 minutes of authorisation by the laboratory. Reports are printed and distributed several times daily.

4.5.2 Within the hospital results will not generally be issued by telephone: enquirers will be expected to access results via the Sunquest ICE system. This is more secure and reduces the risk of transcription errors.

4.5.3 Results for general practice are transmitted electronically periodically throughout the day.

4.5.4 FAX is considered an insecure method of communicating results. Individual results may be electronically transmitted (or re-transmitted) on request. Reports may also be emailed to the requesting GP/Clinician.

4.6 Toxicology

4.6.1 Full toxicology screening in patients suspected to have overdosed is a complex and expensive undertaking and is not routinely available for clinical management of patient care. A standard drugs of abuse screen can be referred to a specialist laboratory for analysis. This screen will identify the following drugs: Cocaine, Cannabis, Methadone, Amphetamines, Opioids, Buprenorphine, Benzodiazepines.

4.6.2 If results are required urgently or other drug tests are required, please contact the laboratory to discuss. A limited panel of drugs is available for rapid screening in the laboratory; however this is only available with the approval of an ITU registrar or consultant.

4.6.3 Urine samples for drugs of abuse screening may be submitted routinely. Note that this is a clinical service, and this testing is not suitable for legal purposes (e.g. employment, child custody).

4.7 Therapeutic Drugs

4.7.1 Therapeutic drug requests must include the date and time of dose and sample. Routine assays available are:

4.7.2

	Sampling
• Carbamazepine	Immediately before an oral dose
• Digoxin	> 6 hours post dose
• Lithium	> 12 hours post dose
• Phenobarbitone	Immediately before an oral dose

- Phenytoin Immediately before an oral dose
- Theophylline Immediately before an oral dose
- If IV then >12 hours after initiation
- Valproate Immediately before an oral dose

4.7.2.1 Other tests may be available by arrangement with the laboratory.

4.8 Cardiac Markers

4.8.1 The laboratory's current cardiac marker is Troponin T. Samples should be taken at least 6 hours post event. Please see NICE guidelines DG40 and CG95. There should be an initial sample, followed by a second sample at 30 mins - 3hrs later. A negative test may not need repeating if it was below the LLOQ.

4.9 Liver Function Tests

4.9.1 The laboratory routinely offers total protein, albumin, total bilirubin, alkaline phosphatase and ALT as a routine liver profile. Additional tests may be scheduled if abnormal results are found.

4.10 Thyroid Function Tests

4.10.1 Thyroid stimulating hormone (TSH) is the laboratory's front-line test of thyroid function. Scheduling of further tests (free T4, free T3, TPO antibodies) depends on the TSH result, the clinical details supplied on the request form and, occasionally, on previous thyroid function results.

4.11 Lipids

4.11.1 A front-line fasting sample is no longer required. Where applicable LDL Cholesterol is calculated from total cholesterol, HDL and triglycerides.

4.12 Additional Testing

4.12.1 Add-on tests can be accepted within the time limits shown in the table below. These time limits assume that the sample was not initially haemolysed or lipaemic and that the sample was originally taken into the correct container as listed elsewhere in this handbook. If a test is not listed below, please contact the laboratory for more information.

4.12.2 The information is based on manufacturer's information (when available) and on the document: "WHO Use of Anticoagulants in Diagnostic Laboratory Investigations and Stability of Blood, Plasma and Serum Samples (2002)" http://whqlibdoc.who.int/hq/2002/WHO_DIL_LAB_99.1_Rev.2.pdf

4.12.3 To add a test or for further advice please contact the laboratory on 020 288 5775.

4.12.4 Note that the standard storage length for laboratory samples is 7 days.

Add-on test	Time	Add-on test	Time	Add-on test	Time
Alk Phos	7 days	Creatinine	7 days	Progesterone	5 days
AFP	7 days	Digoxin	7 days	Prolactin	7 days
ALT	7 days	Free T3/T4	7 days	Protein	7 days
Amylase	7 days	FSH	5 days	Protein EPS	7 days
Androgens	3 days	Gamma-GT	7 days	PSA	5 days
AST	7 days	HbA1c	3 days	SACE	7 days
Beta-HCG	3 days	HDL-Chol	7 days	Salicylate	7 days
Bicarbonate	4 hours	Igs	7 days	SHBG	7 days
Bilirubin	7 days	Iron	7 days	Sodium	7 days
Bone Profile	5 days	LDH	4 days	Testosterone	7 days
CRP	7 days	LFT's	7 days	Theophylline	7 days
CA12-5	5 days	LH	7 days	TIBC	7 days
CA19-9	7 days	Lithium	7 days	Triglycerides	7 days
Calcium	7 days	Magnesium	3 days	Troponin-T	24hrs
Carbamazepine	7 days	Oestradiol	7 days	TSH	7 days
CEA	7 days	Osmolality	7 days	Urate	5 days
Chloride	7 days	Paracetamol	2 days	Urea	7 days
Cholesterol	7 days	Phenytoin	4 days	Valproate	7 days
CK	7 days	Phosphate	4 days		
Cortisol	4 days	Potassium	3 days		

4.13 Factors that may affect adversely affect the results of the Investigation

4.13.1 There can be many artefactual influences on Biochemistry results which adversely affect the processing of samples, and the results generated: a few of the commoner ones are as follows:

Artefact	Description	Effect (key examples, not an exhaustive list).
Delayed separation	Many analytes are affected if there is a delay in transporting samples to the laboratory. In general, all samples should reach the laboratory within 6 hours of venepuncture. There are specific examples where samples must be processed immediately (e.g. certain hormone assays). Details are available in the test guide.	↑ Potassium ↑ Phosphate ↑ Magnesium

Improper storage prior to delivery	In general refrigeration is not recommended: it increases the rate at which potassium leaks from erythrocytes. Samples should be held at room temp unless otherwise advised.	↑ Potassium
Haemolysis	Haemolysed samples may be unsuitable for analysis, this is either due to the high level of an analyte in the erythrocyte relative to plasma or for reasons of analytical interference. Haemolysis is caused by damage to the red cells, this can happen in a number of ways: -At sample collection by using the wrong size needle, applying too much pressure, or leaving a tourniquet on too long. -Post collection handling by mixing the sample incorrectly, shaking it too vigorously, or transferring it between tubes. -During transportation by exposing the sample to extreme temperatures of jarring it.	↑ Potassium ↑ Phosphate ↑ Magnesium
High platelets/white cells	Potassium may be released from platelets/white cells during clotting of serum samples. Samples with high platelets/white cells may give artefactually elevated potassium results.	↑ Potassium
Lipaemia/ High total protein.	Lipaemia causes analytical interference in several methods. This is where there are too many lipids in the sample making them appear cloudy or milky white when spun. Causes of lipaemia include: -Eating fatty foods before a blood draw. -Chronic conditions like diabetes, hypercholesterolemia and pancreatitis. -Some medications. -Intravenous infusions - e.g. parenteral nutrition.	↓ Sodium
EDTA, Citrate, Fluoride Oxalate contamination	Seen when blood is transferred between collection tubes, or order of draw is not followed.	Varying effects depending on contaminate. EDTA has a significant effect on Potassium, Calcium, magnesium and ALP. Citrate has a significant effect on Sodium.

		Fluoride Oxalate has a significant effect on both Potassium and Sodium.
Drip arm contamination	Seen when samples are taken from the same arm as a drip, or the same access is used.	Varying effect dependant on infusion, can have a dilution effect on the blood showing a general decrease in analyte concentration.

4.13.2 Samples are analytically assessed for haemolysis, lipaemia and icterus. Where such interferences are detected, results will be automatically suppressed.

4.14 Biochemistry Test Guide

4.14.1 The table in this section provides details of the testing available through biochemistry. For further information please contact the laboratory on extension 5775.

4.14.2 Not all of the tests listed are available routinely.

4.14.3 The majority of immunology tests are dealt with by the serology department and require a separate sample.

4.14.4 All samples should be sent to the laboratory as promptly as possible: most assays will show some deterioration with time. In some instances, rapid processing of the sample is essential this is noted in the sample requirements below. These samples must be brought directly to the laboratory and not left for routine collection.

4.14.5 The laboratory uses the BD Vacutainer system for blood samples – tube cap colours prefix the container entries below. Paediatric equivalents are:

- No anti-coagulant White Top 2ml
- Heparinised Orange Top 2ml
- Fluoride-Oxalate Yellow Top 1ml
- EDTA Red Top 2ml

4.14.6 Lesser volumes are frequently adequate for paediatric testing: please contact the laboratory as required.

4.14.7 24 hour containers – with or without preservative – are available from blood sciences specimen reception.

4.14.8 Once completed the 24hr containers should be dropped at specimen reception along with the request form.

4.14.9 For further information on the preparation of the patient for all other tests please refer to Lab Tests Online-UK http://labtestsonline.org.uk/

4.14.10 All volumes are in mL except where stated. The preferred volume indicates the ideal sampling, which is directly from the primary tube, for single or multiple tests. Note that several tests are often analysed from the same sample and the preferred volume will include multiple tests, as indicated on the request form or via order communications.
Where sample volumes are difficult to achieve the laboratory will provide guidance on minimum volume required.

4.14.11 Reference Range

4.14.12 The reference range will be printed on the report or transmitted electronically with the result.

4.14.13 Blood Tests:

Biochemistry Test	Container	Volume (mL)	On site / Referral	Units	TAT* Inpatients	TAT* GP
6TGN	Lavender EDTA	4	Referral		21 days	21 days
17-OH Progesterone	Gold Top (SST)	5	Referral	nmol/L	21 days	21 days
ACE	Gold Top (SST)	5	Referral	iu/L	7 days	7 days
ACTH	Purple Top (EDTA) **(Immediate transport to lab)**	4	Referral	ng/L	21 days	21 days
Acyl Carnitine	Blood Spot (Guthrie Card)	n/a	Referral	n/a	21 days	21 days
AFP	Gold Top (SST)	5	On Site	ku/L	24 hours	24 hours
Albumin	Gold Top (SST)	5	On Site	g/L	4 hours	24 hours
Alcohol	Grey Top (Fluoride Oxalate)	2	On Site	mg/dL	4 hours	

Biochemistry Test	Container	Volume (mL)	On site / Referral	Units	TAT* Inpatients	TAT* GP
Aldosterone	Purple Top (EDTA) **(Immediate transport to lab)**	4	Referral	pmol/L	21 days	21 days
Alk Phos Isoenzymes	Gold Top (SST)	5	Referral	n/a	21 days	21 days
Alkaline Phosphatase	Gold Top (SST)	5	On Site	iu/L	4 hours	24 hours
Alpha-1-Antitrypsin	Gold Top (SST)	5	Referral	g/L	21 days	21 days
ALT	Gold Top (SST)	5	On Site	iu/L	4 hours	24 hours
Aluminium	Royal Blue - Red Stripe	5	Referral	ug/mL	21 days	21 days
Amiodarone	Gold Top (SST)	5	Referral	n/a	21 days	21 days
Ammonia	Purple Top (EDTA) **(Immediate transport to lab within 15 minutes of collection, preferably on wet ice)**	5	On Site	umol/L	2 hours	
Amylase	Gold Top (SST)	5	On Site	u/L	4 hours	24 hours
Androstenedione	Gold Top (SST)	5	Referral	nmol/L	14 days	14 days
Anion Gap	Gold Top (SST)	5	On Site	mmol/L	4 hours	
Anti-SARS-CoV-2 Spike-RBD	Gold Top (SST)	5	On Site	n/a	7 days	7 days
AST	Gold Top (SST)	5	On Site	iu/L	4 hours	24 hours
Beta 2 Microglobulin	Gold Top (SST)	5	Referral	mg/L	21 days	21 days
Beta-HCG	Gold Top (SST)	5	On Site	iu/L	4 hours	24 hours
Biliary ALP	Gold Top (SST)	5	Referral	u/L	21 days	21 days
Bile Acids	Gold Top (SST)	5	On Site	umol/L	4 hours	24 hours

Biochemistry Test	Container	Volume (mL)	On site / Referral	Units	TAT* Inpatients	TAT* GP
Bilirubin	Gold Top (SST)	5	On Site	umol/L	4 hours	24 hours
Blood Gases	Blood Gas Syringe **(Immediate transport to lab)**	2	On Site	kPa	30 mins	
Blood Porphyrin	Green - Lithium Heparin **(Immediate transport to lab and protect from light)**	5	Referral	n/a	21 days	21 days
Bone ALP	Gold Top (SST)	5	Referral	u/L	21 days	21 days
C3	Gold Top (SST)	5	On Site	mg/dl	1 day	
C4	Gold Top (SST)	5	On Site	mg/dl	1 day	
CA12-5	Gold Top (SST)	5	On Site	u/mL	24 hours	24 hours
CA15-3	Gold Top (SST)	5	Referral	u/mL	14 days	14 days
CA19-9	Gold Top (SST)	5	On Site	u/mL	7 Days	
Cadmium	Purple Top (EDTA)	4	Referral	nmol/L	14 days	14 days
Caeruloplasmin	Trace element	5	Referral	g/L	21 days	21 days
Calcitonin	Gold Top (SST) **Take on ICE spin & freeze <30 mins**	4	On Site	ug/L	28 days	
Calcium (adjusted)	Gold Top (SST)	5	On Site	mmol/L	4 hours	24 hours
Carbamazepine	Gold Top (SST)	5	On Site	mg/L	8 hours	24 hours
Carotenes	Gold Top (SST) **(Immediate transport to lab and protect from light)**	5	Referral	umol/L	4 days	4 days
CEA	Gold Top (SST)	5	On Site	ug/L	24 hours	24hours
Chloride	Gold Top (SST)	5	On Site	mmol/L	4 hours	24 hours

Biochemistry Test	Container	Volume (mL)	On site / Referral	Units	TAT* Inpatients	TAT* GP
Cholesterol	Gold Top (SST)	5	On Site	mmol/L	8 hours	24 hours
Cholinesterase	Gold Top (SST)	5	Referral	n/a	21 days	21 days
Chromium	Royal Blue - Purple Stripe	5	Referral	ug/L	21 days	21 days
CK	Gold Top (SST)	5	On Site	iu/L	4 hours	24 hours
Cobalt	Royal Blue - Purple Stripe	5	Referral	ug/L	21 days	21 days
Common Alpha Sub Unit	Gold Top (SST)	5	Referral	IU/L	28 days	21 days
Conjugated Bilirubin	Gold Top (SST)	5	On Site	umol/L	4 hours	24 hours
Copper	Royal Blue	5	Referral	umol/L	21 days	
Cortisol	Gold Top (SST)	5	On Site	nmol/L	8 hours	24 hours
C-Peptide	Red Top (Plain)	5	On Site	pmol/L	28 days	
Creatinine	Gold Top (SST)	5	On Site	umol/L	4 hours	24 hours
CRP	Gold Top (SST)	5	On Site	mg/L	4 hours	24 hours
Cryoglobulins	Please contact the laboratory **(Immediate transport to lab).**	5	Referral	n/a	7 days	7 days
Cyclosporin	Purple Top (EDTA)	4	Referral	ug/L	7 days	7 days
DHEAS	Gold Top (SST)	5	Referral	umol/L	14 days	14 days
Digoxin	Gold Top (SST)	5	On Site	ug/L	4 hours	24 hours
eGFR / 1.73m2	Gold Top (SST)	5	On Site	mL/min	4 hours	24 hours
Ethosuximide	Gold Top (SST)	5	Referral	ug/mL	21 days	21 days
Extracted Testosterone	Gold Top (SST)	5	Referral	nmol/L	28 days	28 days
Free Androgen Index	Gold Top (SST)	5	On Site	%	8 hours	24 hours
Free T3	Gold Top (SST)	5	On Site	pmol/L	2 Days	24 hours
Free T4	Gold Top (SST)	5	On Site	pmol/L	8 hours	24 hours
Fructosamine	Gold Top (SST)	5	On Site	umol/L	24 hours	24 hours

Biochemistry Test	Container	Volume (mL)	On site / Referral	Units	TAT* Inpatients	TAT* GP
FSH	Gold Top (SST)	5	On Site	iu/L	24 hours	24 hours
Gamma GT	Gold Top (SST)	5	On Site	iu/L	4 hours	24 hours
Gastrin	Purple Top (EDTA) **(Immediate transport to lab)**	4	Referral	pmol/L	21 days	21 days
Glucagon	Purple Top (EDTA) **(Immediate transport to lab)**	4	Referral	pmol/L	21 days	21 days
Glucose	Grey Top (Fluoride Oxalate)	2	On Site	mmol/L	4 hours	24 hours
Growth Hormone	Gold Top (SST)	5	Referral	ug/L	14 days	14 days
Haptoglobins	Gold Top (SST)	5	Referral	g/L	14 days	14 days
HbA1c	Purple Top (EDTA)	4	On Site	mmol/mol	48 hours	48 hours
HDL Cholesterol	Gold Top (SST)	5	On Site	mmol/L	8 hours	24 hours
Homocysteine	Purple Top (EDTA)	4	Referral	umol/L	14 days	14 days
IgA	Gold Top (SST)	5	On Site	g/L	12 hours	24 hours
IGF-1	Gold Top (SST)	5	Referral	nmol/L	21 days	21 days
IgG	Gold Top (SST)	5	On Site	g/L	24 hours	24 hours
IgG Subclasses	Gold Top (SST)	5	Referral	n/a	21 days	21 days
IgG/Transferrin Ratio	Gold Top (SST)	5	Referral	ratio	21 days	21 days
IgM	Gold Top (SST)	5	On Site	g/L	24 hours	24 hours
Immunofixation	Gold Top (SST)	5	On Site	n/a	14 days	14 days
Insulin	Red Top (Plain)	5	On Site	mu/L	28 days	28 days
Iron	Gold Top (SST)	5	On Site	umol/L	8 hours	24 hours

Biochemistry Test	Container	Volume (mL)	On site / Referral	Units	TAT* Inpatients	TAT* GP
Lactate	Grey Top (Fluoride Oxalate) **(Immediate transport to lab)**	2	On Site	mmol/L	2hours	
Lamotrigine	Gold Top (SST)	5	Referral	mg/L	16 days	16 days
LDH	Gold Top (SST)	5	On Site	iu/L	8 hours	24 hours
LDL Cholesterol	Gold Top (SST)	5	On Site	mmol/L	4 hours	24 hours
Lead	Purple Top (EDTA) (Also requires an empty tube from the same batch to act as a blank)	4	Referral	umol/L	14 days	14 days
Levetiracetam	Gold Top (SST)	5	Referral	mg/l		
LH	Gold Top (SST)	5	On Site	iu/L	24hours	24 hours
Lithium	Gold Top (SST)	5	On Site	mmol/L	4 hours	24 hours
Liver ALP	Gold Top (SST)	5	Referral	u/L	21 days	
Macroprolactin	Gold Top (SST)	5	Referral	n/a	10 days	
Magnesium	Gold Top (SST)	5	On Site	mmol/L	4 hours	24 hours
Mercury	Purple Top (EDTA)	5	Referral	nmol/L	14 days	
Neurotensin	Purple Top (EDTA) **(Immediate transport to lab)**	4	Referral	pmol/L	21 days	
NT-proBNP (available to GPs only)	Gold Top (SST)	5	On Site	ng/L		4 days
Oestradiol	Gold Top (SST)	5	On Site	pmol/L	24 hours	24 hours
Osmolality	Gold Top (SST)	5	On Site	mosmol/kg	12 hours	
10-Hydroxycarbazepine	Gold Top (SST)	5	Referral	ng/l		

Biochemistry Test	Container	Volume (mL)	On site / Referral	Units	TAT* Inpatients	TAT* GP
P. Polypeptide	Purple Top (EDTA) **(Immediate transport to lab)**	4	Referral	pmol/L	21 days	21 days
Paracetamol	Gold Top (SST)	5	On Site	mg/L	4 hours	
Phenobarbitone	Gold Top (SST)	5	Referral	mg/L	7 days	21 days
Phenytoin	Gold Top (SST)	5	On Site	mg/L	4 hours	24 hours
Phosphate	Gold Top (SST)	5	On Site	mmol/L	4 hours	24 hours
Plasma Amino Acids	Green - Lithium Heparin (adult) Orange – Lithium Heparin (Paediatric) **(Immediate transport to lab)**	5	Referral	n/a	21 days	21 days
Placental Growth Factor (PLGF)	Purple- EDTA	5	On Site		2 hours	
Potassium	Gold Top (SST)	5	On Site	mmol/L	4 hours	24 hours
Primidone	Gold Top (SST)	5	Referral	mg/L	21 days	21 days
Procollagen III	Gold Top (SST)	5	Referral	ug/L	21 days	21 days
Progesterone	Gold Top (SST)	5	On Site	nmol/L	24 hours	24 hours
Pro-Insulin	Green - Lithium Heparin **(Immediate transport to lab)**	5	Referral	n/a	28 days	
Prolactin	Gold Top (SST)	5	On Site	mu/L	24hours	24 hours
Protein Electrophoresis	Gold Top (SST)	5	On Site	n/a	7 days	7 days
PSA	Gold Top (SST)	5	On Site	ug/L	24 hours	24 hours
PTH	Gold Top (SST)	5	On Site	pmol/L	24 hours	24 hours
Renin	Purple Top (EDTA)	4	Referral	nmol/h/L	21 days	21 days

Biochemistry Test	Container	Volume (mL)	On site / Referral	Units	TAT* Inpatients	TAT* GP
	(Immediate transport to lab)					
Salicylate	Gold Top (SST)	5	On Site	mg/L	4 hours	
Selenium	Royal Blue – Trace Metals (available from lab)	5	Referral	umol/L	21 days	21 days
SHBG	Gold Top (SST)	5	On Site	nmol/L	24 hours	24 hours
Sodium	Gold Top (SST)	5	On Site	mmol/L	4 hours	24 hours
Somatomedin C	Gold Top (SST) **(Immediate transport to lab)**	5	Referral	nmol/L	28 days	28 days
Tacrolimus FK506	Purple Top (EDTA)	4	Referral	ug/L	7 days	7 days
Testosterone	Gold Top (SST)	5	On Site	nmol/L	24hours	24 hours
Theophylline	Gold Top (SST)	5	On Site	mg/L	4 hours	24 hours
Thyroglobulin	Gold Top (SST)	5	Referral	ug/L	21 days	21 days
Thyroid Binding Glob	Gold Top (SST)	5	Referral	mg/L	28 days	28 days
Thyroid Receptor Antibodies	Gold Top (SST)	5	Referral	u/L	28 days	28 days
TIBC	Gold Top (SST)	5	On Site	umol/L	8 hours	24 hours
Total CO2	Gold Top (SST)	5	On Site	mmol/L	4 hours	24 Hours
Total Protein	Gold Top (SST)	5	On Site	g/L	4 hours	24 hours
TPMT	Purple Top (EDTA)	4	Referral	pmol/h/mgHb	21 days	21 days
TPO Antibodies	Gold Top (SST)	5	On Site	iu/mL	8 hours	
Transferrin	Gold Top (SST)	5	Referral	n/a	21 days	21 days
Transferrin Saturation	Gold Top (SST)	5	On Site	%	8 hours	24 hours
Triglycerides	Gold Top (SST)	5	On Site	mmol/L	8 hours	24 hours
Troponin-T	Gold Top (SST)	5	On Site	ng/L	4 hours	

Biochemistry Test	Container	Volume (mL)	On site / Referral	Units	TAT* Inpatients	TAT* GP
Tryptase (Mast Cell)	Gold Top (SST) **(Immediate transport to lab)**	5	Referral	ug/L	21 days	21 days
TSH	Gold Top (SST)	5	On Site	mu/L	8 hours	24 hours
Urate	Gold Top (SST)	5	On Site	mmol/L	4 hours	24 hours
Urea	Gold Top (SST)	5	On Site	mmol/L	4 hours	24 hours
V.I.P.	Purple Top (EDTA) **(Immediate transport to lab)**	4	Referral	pmol/L	21 days	21 days
Valproic Acid	Gold Top (SST)	5	On Site	mg/L	4 hours	
Very Long Chain Fatty Acids	Gold Top (SST) **(Immediate transport to lab)**	5	Referral	see report	28 days	28 days
Vigabatrin	Gold Top (SST)	5	Referral	umol/l		
Vitamin A	Gold Top (SST) **(protect from light and Immediate transport to lab)**	5	Referral	umol/L	21 days	21 days
Vitamin D	Gold Top (SST)	5	On Site	nmol/L	1 day	24 hours
Vitamin E	Gold Top (SST) **(Immediate transport to lab)**	5	Referral	umol/L	28 days	28 days
Zinc	Royal Blue	5	Referral	umol/L	21 days	21 days

4.14.14 Urine Tests:

Biochemistry Test	Container	Vol (mL)	On site / Referral	Units	TAT* Inpatients	TAT* GP
Urine 5-HIAA excretion	Timed 24 hour Collection + Preservative	n/a	Referral	umol/d	21 days	21 days
Urine 5-HIAA/Creat Ratio	Timed 24 hour Collection + Preservative	n/a	Referral	umol/mmol	21 days	21 days

Biochemistry Test	Container	Vol (mL)	On site / Referral	Units	TAT* Inpatients	TAT* GP
Urine Albumin/Creat Ratio (ACR)	Universal container - Mid Stream	20	On Site	mg/mmol	24 hours	
Urine Amino Acids	Universal container - Mid Stream	20	Referral	n/a	21 days	21 days
Urine Amylase	Universal container - Mid Stream	20	Referral	u/L	4 days	21 days
Urine Bence Jones Protein	Universal container	20	On Site	n/a	6days	6 days
Urine Cadmium/Creat	Universal container - Mid Stream	20	Referral	nmol/mm	14 days	14 days
Urine Calcium excretion	Timed 24 hour Collection	n/a	On Site	mmol/d	24 hours	24 hours
Urine Calcium/Creat Clearance Ratio	Timed 24 hour collection + 1Gold Top (SST)	n/a	On Site	n/a	24 hours	24 hours
Urine Calcium/Creat Ratio (paediatric only)	Universal container - Mid Stream	20	On Site	mmol/mm	24 hours	24 hours
Urine Catecholamines	Timed 24 hour Collection + Preservative	n/a	Referral	See report	21 days	21 days
Urine Citrate excretion	Timed 24 hour Collection + Preservative	n/a	Referral	mmol/d	21 days	21 days
Urine Copper excretion	Timed 24 hour Collection	n/a	Referral	umol/d	21 days	21 days
Urine Cortisol excretion	Timed 24 hour Collection	n/a	Referral	nmol/d	8 days	8 days
Urine Creatinine Clearance	Timed 24 hour collection + 1Gold Top (SST)	n/a	On Site	mL/min	24 hours	24 hours
Urine Creatinine excretion	Timed 24 hour Collection	n/a	On Site	mmol/d	24 hours	24 hours
Urine Cystine	Universal container - Mid Stream **(Immediate transport to lab)**	20	Referral	n/a	12 days	12 days
Urine Drugs of Abuse	Universal container - Mid Stream	20	Referral	n/a	14 days	14 days

Biochemistry Test	Container	Vol (mL)	On site / Referral	Units	TAT* Inpatients	TAT* GP
Urine Fixation	Universal container	20	On Site	n/a	14 days	14 days
Urine GAG/Creatinine ratio	Universal container - Mid Stream **(Immediate transport to lab)**	20	Referral		42 days	42 days
Urine Glycollate excretion	Timed 24 hour Collection	n/a	Referral	mmol/d	21 days	21 days
Urine Mercury/Creat	Universal container - Mid Stream	20	Referral	nmol/mmol	14 days	14 days
Urine Mucopolysaccharides	Universal container - Mid Stream **(Immediate transport to lab)**	20	Referral	n/a	42 days	42 days
Urine Organic Acids	Universal container - Mid Stream **(Immediate transport to lab)**	20	Referral	n/a	35 days	35 days
Urine Osmolality	Universal container - Mid Stream	20	On Site	mosmol/kg	12 hours	12 hours
Urine Oxalate excretion	Timed 24 hour Collection + Preservative	n/a	Referral	umol/d	28 days	28 days
Urine Phosphate excretion	Timed 24 hour Collection	n/a	On Site	mmol/d	24 hours	24 hours
Urine Phosphate/Creat Ratio	Universal container - Mid Stream	20	On Site	mmol/mmol	24 hours	24 hours
Urine Porphobilinogen	Universal container **(protect from light)**	20	Referral	n/a	24 hours	24 hours
Urine Porphyrins (screen)	Universal container - Mid Stream (during attack)	20	Referral	n/a	24 hours	24 hours
Urine Potassium (spot)	Universal container - Mid Stream	20	On Site	mmol/L	24 hours	24 hours
Urine Potassium excretion	Timed 24 hour Collection	n/a	On Site	mmol/d	24 hours	24 hours
Urine Protein excretion	Timed 24 hour Collection	n/a	On Site	g/d	24 hours	24 hours

Biochemistry Test	Container	Vol (mL)	On site / Referral	Units	TAT* Inpatients	TAT* GP
Urine Protein/Creat Ratio (PCR)	Universal container - Mid Stream	20	On Site	mg/mmol	24 hours	24 hours
Urine Sodium (spot)	Universal container - Mid Stream	20	On Site	mmol/L	24 hours	24 hours
Urine Sodium excretion	Timed 24 hour Collection	n/a	On Site	mmol/d	24 hours	24 hours
Urine Steroid Profile	Timed 24 Hour Collection **(Immediate transport to lab)**	n/a	Referral	n/a	21 days	21 days
Urine Urate excretion	Timed 24 hour Collection	n/a	On Site	mmol/d	24 hours	24 hours
Urine Urea excretion	Timed 24 hour Collection	n/a	On Site	mmol/d	24 hours	24 hours
Urine VMA	Universal container - Mid Stream	n/a	On Site	Umol/mmol	1 month	1 month

4.14.15 CSF Tests:

Biochemistry Test	Container	Vol (mL)	On site / Referral	Units	TAT* Inpatients	TAT* GP
CSF Glucose	Grey Top (Fluoride Oxalate)	2	On Site	mmol/L	4 hours	NA
CSF Lactate	Grey Top (Fluoride Oxalate) **(Immediate transport to lab)**	2	On Site	mmol/L	4 hours	NA
CSF LDH	Universal container	2	Referral	iu/L	24 hours	NA
CSF Oligoclonal Bands	Universal container / + 1Gold Top (SST)	2	Referral	n/a	21 days	NA
CSF Protein	Universal container	2	On Site	g/L	4 hours	NA
CSF Xanthochromia	Universal container **(protect from light)**	2	Referral	n/a	24 hours	NA

4.14.16 Fluid Tests:

Biochemistry Test	Container	Vol (mL)	On site / Referral	Units	TAT* Inpatients	TAT* GP
Fluid Albumin	Universal container	5	On Site		4 hours	NA
Fluid Amylase	Universal container	5	On Site	umol/L	4 hours	NA
Fluid Calcium	Universal container	5	On Site	mmol/L	4 hours	NA
Fluid Cholesterol	Universal container	5	On Site	mmol/L	4 hours	NA
Fluid Creatinine	Universal container	5	On Site	umol/L	4 hours	NA
Fluid Glucose	Grey Top (Fluoride Oxalate)	2	On Site	mmol/L	4 hours	NA
Fluid LDH	Universal container	5	On Site	iu/L	4 hours	NA
Fluid pH	Blood gas syringe **(Immediate transport to lab)**	2	On Site		30 minutes	NA
Fluid Potassium	Universal container	5	On Site	mmol/L	4 hours	NA
Fluid Protein	Universal container	5	On Site	g/L	4 hours	NA
Fluid Sodium	Universal container	5	On Site	mmol/L	4 hours	NA
Fluid Triglycerides	Universal container	5	On Site	mmol/L	4 hours	NA
Fluid Urate	Universal container	5	On Site	mmol/L	4 hours	NA
Fluid Urea	Universal container	5	On Site	mmol/L	4 hours	NA

4.14.17 Faecal Tests

Biochemistry Test	Container	Volume (mL)	On site / Referral	Units	TAT* Inpatients	TAT* GP
Faecal Elastase	Faeces container	10 g	Referral	n/a	21 days	21 days
Faecal Calprotectin	FIT collection tube.	Pea size	On Site	mg/kg	14 days	14 days
Faecal Immunochemical testing (FIT)	FIT collection tube.		On Site			
Faecal Porphyrin	Faeces container **(protect from light)**	10 g	Referral	n/a	21 days	21 days

4.14.18 Other Tests

Biochemistry Test	Container	Vol	On site / Referral	Units	TAT* Inpatients	TAT* GP
Stone Analysis	60 ml plastic Pot		Referral		14 days	14 days
Sweat Chloride	Plastic conical tube	As collected	Referral	mmol/L	4 days	NA

Biochemistry Test	Container	Vol	On site / Referral	Units	TAT* Inpatients	TAT* GP
Sweat Sodium	Plastic conical tube	As collected	Referral	mmol/L	4 days	NA
Toxicology (samples will be saved)	Discuss with laboratory	n/a	Referral	NA	28 days	NA

4.15 Referred Tests

4.15.1 Many low demand assays are referred to reference laboratories for analysis. Reports on these tests are slower since time must be allowed for transport of the sample and most laboratories will batch analyses. A list of reference laboratories used by the laboratory is included below.

4.15.2 The analysing laboratory is always displayed on the report with results.

Hospital	Location		Laboratory
Charing Cross Hospital	Fulham Palace Road	London	Medical Oncology
Great Ormond Street Hospital	Great Ormond St	London	Chemical Pathology
Guy's Hospital	St Thomas Street	London	Purine Research Lab
Hammersmith Hospital	Du Cane Road	London	Clinical Chemistry
Institute of Child Health	Guildford St	London	Enzyme Laboratory
King's College Hospital	Denmark Hill	London	Clinical Biochemistry
National Hospital	Queens Square	London	Neuroimmunology
Rotherham Hospital	Moorgate Road	Rotherham	Clinical Biochemistry
Royal Brompton Hospital	Sidney Street	London	Biochemistry
Royal Free Hospital	Pond Street	Hampstead	Clinical Biochemistry
Royal Liverpool Hospital	Prescot Street	Liverpool	Endocrinology
Royal Newcastle Infirmary	Queen Victoria Road	Newcastle Upon Tyne	SAS Laboratory
SAS Steroid Hormone Centre	Thoresby Place	Leeds	Clinical Chemistry
Selly Oak Hospital	Raddlebarn Road	Birmingham	Clinical Biochemistry
Sheffield PRU	PO Box 894	Sheffield	Immunology
St. Bartholomew's	Newark Street	London	Clinical Biochemistry
St James' University Hospital	Beckett Street	Leeds	Biochemistry
St Thomas' Hospital	Westminster Bridge Road	London	Chemical Pathology
UCLH/Middx Hospital	Whitfield Street	London	Chemical Pathology

5 Haematology and Coagulation

5.1 Haematology Service

5.1.1 The Haematology department offers a wide range of investigations including cellular haematology, coagulation, and blood transfusion and haemoglobinopathy studies.

5.1.2 Many low demand assays and more specialised investigations such as cell-markers and thrombophilia screens are referred to reference laboratories for analysis. Reports on these tests are slower since time must be allowed for transport of the sample and most laboratories will batch analyses. A list of reference laboratories used by the laboratory is included in this guide. The analysing laboratory is always displayed with results.

5.2 Contact Details:

5.2.1 A Member of haematology staff is available at all times to offer advice on appropriate investigations and interpretation of results.

5.2.2 Consultants:

- Dr Ali Rismani: 07881821762 a.rismani@nhs.net
- Dr Emma Drasar: 0207 288 5034 e.drasar@nhs.net
- Dr Zara Sayar: 0207 288 5791 zara.sayar@nhs.net
- Dr Ryan Mullally: 0207 288 5791 ryanmullally@nhs.net
- Dr Annie McMillan: 0207 288 5791 Annabel.mcmillan@nhs.net
- Registrars: 020 7288 5756

Haematology Lab (technical queries ONLY): 020 7288 5037

Blood Transfusion Lab: 020 7288 5762

Results: 020 7288 5775

On Call Biomedical Scientist: Bleep 2686

5.3 URGENT REQUESTS

5.3.1 Most tests can be prioritised in exceptional circumstances: please contact the laboratory.

5.3.2 Use of the priority flag on Sunquest ICE requests should ensure that samples are processed more rapidly.

5.4 Out of Hours Service

5.4.1 The Haematology laboratory operates 24/7, outside routine working hours the service is covered by a single Biomedical Scientist who covers both Haematology and Blood Transfusion. Requests should be restricted to those tests affecting immediate patient management. Urgent requests must be arranged in advance with the Duty Haematology Scientist by bleeping 2686.

5.4.2 The following tests will normally be processed out of hours:

Full Blood Count, Reticulocytes, Coagulation Screen, INR, APTT, ESR, Malaria Parasites , Sickle Solubility test and blood films if indicated.

Other tests may be available on discussion with the on-call Haematology Scientist or senior member of staff on duty.

5.5 Results

5.5.1 Results are available on Sunquest ICE within 5 minutes of authorisation by the laboratory.

Within the hospital results will not generally be issued by telephone: enquirers will be expected to access results via the Sunquest ICE system. This is more secure and reduces the risk of transcription errors.

5.5.2 Results for general practice are transmitted electronically periodically throughout the day.

Individual results may be electronically transmitted (or re-transmitted) or emailed on request.

5.6 Haemoglobinopathy Service

5.6.1 The haematology department runs a comprehensive haemoglobinopathy service that includes diagnosis and management. This also includes the antenatal and new born (ANNB) Screening Programme for sickle cell and Thalassemia. For more information visit; https://www.gov.uk/government/collections/nhs-population-screening-programme-standards#sickle-cell-and-thalassaemia-(sct)-screening .

5.6.2 The technology employed in the identification of haemoglobin variants is HPLC. Reports on POSITIVE results include information leaflets for the patient and the doctor along with a Haemoglobinopathy Card for the patient to carry at all times. This card should be shown to any doctor, dentist or midwife that the patient consults. All the Haematology consultants manage patients with haemoglobinopathies through their outpatient clinics and as inpatients.

5.7 Add on Requests

5.7.1 Please see the Haematology test list for the time limits for additional requests. These time limits assume that the sample was not initially haemolysed, underfilled, clotted or lipaemic and that the sample was originally taken into the correct container as listed elsewhere in this handbook.

5.7.2 To add a test or for further advice please contact the laboratory on 020 288 5775 or bleep 2686 out of hours.

5.7.3 Note that the laboratory only retains FBC samples for 5 days and coagulation samples for 24 hrs.

5.8 Factors that may affect adversely affect the results of the Investigation

5.8.1 EDTA Samples that are clotted or insufficient are not acceptable for:

- Full Blood Count, Reticulocytes, ESR, HB Electrophoresis, G6PD Screen, Sickle Solubility Test, GF Test , Malaria Parasite or Manual Blood Films.

Clots in samples can arise if the samples are not gently mixed after collection.

5.8.2 CITRATE Samples that are clotted or under filled are not acceptable for:

- Coagulation Test (INR, APTT and Fibrinogen) D-dimer and Special Coagulation studies

Clots in samples can arise if the samples are not gently mixed after collection, ensure blood tubes are filled.

5.8.3 Prolonged venous stasis can cause samples to be clotted and also cause activated samples for coagulation tests.

5.8.4 Grossly Haemolysed Samples are not acceptable for Coagulation Tests. Haemolysis is caused by damage to the red cells, this can happen in a number of ways:

- At sample collection by using the wrong size needle, applying too much pressure, or leaving a tourniquet on too long.
- Post collection handling by mixing the sample incorrectly, shaking it too vigorously, or transferring it between tubes.
- During transportation by exposing the sample to extreme temperatures of jarring it.

5.9 Haematology Test Guide

5.9.1 The following tests are available to request through the Haematology service at the Whittington Hospital. For further details please contact the laboratory on extension 5775.

5.9.2 Please note that not all of the tests listed are available routinely and may require discussion with the clinical team.

5.9.3 All samples should be sent to the laboratory as promptly as possible: most assays will show some deterioration with time. In some instances, rapid processing of the sample is essential: in the table below such assays are indicated. These samples must be brought directly to the laboratory and not left for routine collection.

5.9.4 Reference Range

Reference ranges are printed on the report or transmitted electronically with the result.

- Applies to routine working day.

5.9.5 **Haematology Test List:**

Haematology Test	Sample Container	Vol	On site/ Referral	As Additional Test	Units	TAT* Inpatients	TAT* GP
ANTI-CARDIOLIPINS	CLOTTED	6ml	Referral	NA	N/A		
ESR	EDTA	4.0ml	On site	Within 12 hrs if EDTA sample available from previous FBC request.	mm/hour	6hrs	24hrs
FBC	EDTA	4.0ml	On site	NA	N/A	4hrs	24 hrs
RETICULOCYTES	EDTA	4.0ml	On site	24 HRS	% x 109/L	4hrs	24 hrs
GLANDULAR FEVER TEST#	EDTA	4.0ml	On site	3 DAYS	N/A	3 days	3 days
COAGULATION TEST (INR/APTT/FIBRINOGEN)	CITRATE	4.0ml	On site	NA	N/A	4 hrs	
D-DIMER FOR QUERY DVT/PE	CITRATE	4.0ml	On site	Using whole blood 4 hrs.	ng/mL FEU	4 hrs	
Sickle Solubility Test	EDTA	4.0ml	On site	7 days if EDTA sample available from previous FBC request.	N/A		
HAEMOGLOBINOPATHY SCREEN #	EDTA	4.0ml	On site	7 days if EDTA sample available from previous FBC request.	N/A	3 days	3 days
G6PD SCREEN	EDTA	4.0ml	On site	7 days if EDTA sample available from previous FBC request.	N/A		

Haematology Test	Sample Container	Vol	On site/ Referral	As Additional Test	Units	TAT* Inpatients	TAT* GP
G6PD ASSAY	EDTA	4.0ml	Referral	7 days if EDTA sample available from previous FBC request.	IU/gHb		
BLOOD FILM EXAMINATION	EDTA	4.0ml	On site	12hrs	N/A	1 day	1 day
MALARIA PARASITES	EDTA	4.0ml	On site	12hrs	N/A		
HAEMATINIC ASSAY	SST (Gold Top)	6ml	On site	3 days if serum available in Lab.	ng / L	3 Days	3 Days
PLASMA VISCOSITY	EDTA	4.0ml	Referral	NA	pascal	6 weeks	6 Weeks
SPECIAL HAEMOSTASIS STUDIES	CITRATE (transport immediately to lab)	2.7ml	Referral	NA	N/A	6 Weeks	6 Weeks
CYTOGENETIC STUDIES	EDTA	4.0ml	Referral	NA	N/A	6 Weeks	
IMMUNOPHENOTYPING	EDTA	4.0ml	Referral	NA	N/A	6 weeks	6 weeks
ERYTHROPOIETIN LEVEL	SST (Gold Top)	6ml	Referral	NA	Iu/L	6 weeks	6 weeks
HFe GENE MUTATION STUDIES FOR HAEMOCHROMATOSIS	EDTA	7ml	Referral	NA	N/A		
MOLECULAR HAEMOGLOBINOPATHY GENE SEQUENCING	EDTA	4.5 Ml	Referral	7 days if EDTA sample available from previous FBC request.	N/A	4-6 Months	

5.10 Referral Tests

5.10.1 Referral Tests should be requested at a suitable time for results to be available prior to patient's next visit to the Haematology clinic.

5.10.2 Delayed or urgent reports can be obtained from the referral laboratory by telephone.

5.10.3 The table below shows the Haematology referral tests repertoire

Test	Referral Lab / Hospital	Address
Leukaemia Immunophenotyping	Immunophenotyping Lab. Royal Free Hospital	Hampstead, London NW3 2PF.
T-cell Subsets immunophenotyping	SHIMDS Flow Cytometry Level 2 Halo HSL (Health Services Laboratories)	The Halo Building,London,WC1H9AX.
Cytogenetic studies	SHIMDS Flow Cytometry Level 2 Halo HSL (Health Services Laboratories)	The Halo Building,London,WC1H9AX
Haemochromatosis gene mutation	Blood Transfusion Reference Centre	Colindale NW9 5BG
Erytrhopoietin Level	Clinical Chemistry Dept. Kings College Hospital	Denmark Hill, London SE5 9RS.
Special Haemostasis investigations	Haemophilia Centre Royal Free Hospital	Hampstead, London NW3 2PF.
Anti-cardiolipins	Clinical Chemistry Dept. Royal Free Hospital	Hampstead, London NW3 2PF.
Molecular studies for Haemoglobinopathies	Special Haematology Kings - Guys and St Thomas	Great Maze Pond, London SE1 9RT
Plasma Viscosity	Special Coagulation Lab. UCLH	Whitney Street, London WC1
Malaria Parasites confirmation	Malaria reference Lab. Hospital for Tropical Diseases.	Keppel St. London WC1E 1HT
JAK2 status	SHIMDS Flow Cytometry Level 2 Halo HSL (Health Services Laboratories)	The Halo Building,London,WC1H9AX.
G6PD Assay	Special Lab Royal Free Hospital	Pond Street London, NW3

6 Blood Transfusion

6.1 Blood Transfusion Service

6.1.1 Blood transfusion products are provided from the ESL at the Whittington along with associated testing.

6.2 Contact Details

6.2.1 Staff are shared with Haematology, please see section 5.2 for contact details.

6.3 Specimen Requirements

6.3.1 Blood transfusion specimens have additional labelling requirements. Correct patient identification is of paramount importance in all aspects of Blood Transfusion. To ignore this fact could prove fatal to the patient being transfused. All specimens received, within the Blood Transfusion Laboratory, must meet the following criteria.

- All specimens must be labelled with the full name, date of birth and hospital number (NHS number for requests from GP's) and these must match the request form.
- All specimens must be legible and not contain any amendments or crossings out.
- The date and time the specimen was taken along with the signature of the phlebotomist is also required.
- A clinical diagnosis or reason for the request must be on the request form.
- For requests of blood components and products you MUST indicate any Special Transfusion Requirements (e.g. Irradiated, CMV negative etc.) on the request form.
- Any specimen failing the above criteria will be rejected and the appropriate healthcare team informed as soon as possible especially if there are early requirements for blood components.
- Any specimen that contains clots will be rejected and the appropriate healthcare team informed as soon as possible especially if there are early requirements for blood components.
- All rejected specimens will be logged on to the LIMS and answered out with an appropriate comment

6.4 Improving the safety of blood transfusion: ABO confirmatory testing.

6.4.1 Wrong Blood In Tube (WBIT) incidents continue to occur at the Whittington owing to failures during phlebotomy of patients. To protect patients from a potentially fatal transfusion reaction the following protocol has been adopted for those patients where there is no historical blood group record (30%).

- A sample on admission, or from a pre-clerking clinic, will be followed by a laboratory request for a confirmatory sample, but only from those patients that have no previous blood group record. In these cases the following will be added to the blood transfusion laboratory report: **"ABO confirmatory sample required ASAP or upon hospital admission"**
- Telephoned requests will be vetted against the laboratory record and a second independent sample will only be requested for those cases requiring ABO verification.
- Cross-matched blood units will not be released, except in emergencies, until ABO verification against a second independent blood transfusion sample has been performed. A confirmatory ABO group should only take 10 minutes to perform after receipt of the second sample.
- Two samples taken at the same time do not constitute a second confirmatory sample. This will not protect the patient if identified wrongly during phlebotomy.
- Infants on the Neonatal Intensive Care Unit are exempted from this procedure because they receive group O Rh(D) Negative red cell transfusions.

6.5 Blood Transfusion Test List

Blood Transfusion Test	Sample Type	Vol	Special Precautions	Add on time limit
ABO/Rh blood group and antibody screen Adult & Infant (>6 months) Newborn (Cord) Neonate (<6 months) *NB 1 neonatal sample at birth will suffice for the first 4 months of life providing antibody screen and DAT negative.*	 EDTA pink top EDTA pink top EDTA red top	 6ml 6ml 1ml	Under-filled samples. Haemolysed samples. Clots in sample.	24 hrs
Direct Anti-globulin Test (DAT) Adult & Infant (>6 months) Newborn (Cord) Neonate (<6 months)	 EDTA pink top EDTA pink top EDTA red top	 6ml 6ml 1ml	Under-filled samples. Haemolysed samples Clots in sample.	NA

Blood Transfusion Test	Sample Type	Vol	Special Precautions	Add on time limit
Kleihauer test	EDTA purple top	4ml	Under-filled samples. Haemolysed samples. Clots in sample.	n/a
Cross-match red cells Adult & Infant (>6 months) Neonate (<6 months) *NB 1 neonatal sample at birth will suffice for the first 4 months of life providing antibody screen and DAT negative*	 EDTA pink top EDTA red top	 6ml 0.75ml	Under-filled samples. Haemolysed samples. Clots in sample. **In an emergency, where no sample exists or has been tested, 2 units of uncross-matched O Rh D negative blood can be collected from the hospital blood transfusion laboratory.**	72 hours if patient transfused within the last 3 months 7 days if patient not transfused in the last 3 months
Red Cell Immunohaematology NHSBT Reference Centre Colindale NW9 5BG	To be advised by the hospital transfusion laboratory	To be advised by the hospital transfusion laboratory	Under-filled samples. Haemolysed samples. Clots in sample	Discuss with hospital transfusion laboratory
Histocompatibility & Immunogenetics NHSBT Reference Centre Colindale NW9 5BG	To be advised by the hospital transfusion laboratory	To be advised by the hospital transfusion laboratory	**Must discuss request with Consultant Haematologist** Under-filled samples. Haemolysed samples. Clots in sample.	Discuss with hospital transfusion laboratory
Haematopoetic Stem cell transplantation (patients and donors) NHSBT Reference Centre Colindale NW9 5BG	To be advised by the hospital transfusion laboratory	To be advised by the hospital transfusion laboratory	**Must discuss request with Consultant Haematologist** Under-filled samples. Haemolysed samples. Clots in sample	Discuss with hospital transfusion laboratory

Blood Transfusion Test	Sample Type	Vol	Special Precautions	Add on time limit
Platelet Immunology NHSBT Reference Centre Bristol BS34 7QH	To be advised by the hospital transfusion laboratory	To be advised by the hospital transfusion laboratory	**Must discuss request with Consultant Haematologist** Under-filled samples. Haemolysed samples. Clots in sample	Discuss with hospital transfusion laboratory
Granulocyte Immunology NHSBT Reference Centre Bristol BS34 7QH	To be advised by the hospital transfusion laboratory	To be advised by the hospital transfusion laboratory	**Must discuss request with Consultant Haematologist** Under-filled samples. Haemolysed samples. Clots in sample	Discuss with hospital transfusion laboratory

6.6 Turnaround times

REQUEST	TARGET TIMES
Emergency O Rh D negative red cells 2 Adult units – **collect immediately** from laboratory issues blood bank 2 Adult units – **collect immediately** from Labour ward satellite blood bank (obstetrics only) 2 Neonatal units - **collect immediately** from Labour ward satellite blood bank (obstetrics only)	0 minutes
Emergency group specific uncross-matched red cells	15 minutes
Emergency cross-matched red cells without antibody screen	45 minutes
Urgent cross-matched red cells with antibody screen (full testing)	60 minutes
Kleihauer Test	72 hours

6.7 Referral Tests

6.7.1 All referrals go to the NHS Blood & Transplant laboratories.

Referral Tests include:

- Red cell immuno-haematology
- Histocompatibility and Immunogenetics
- Leucocyte Immunology
- Platelet Immunology

- Granulocyte Immunology

6.7.2 Reports on these tests are slower since time must be allowed for transport of the sample. Details of reference laboratories are given on the hard copy reports. These are forwarded to the consultant responsible for the patient

6.8 Blood Transfusion Referral Tests.

Test	Referral Lab / Hospital	Address
Red Cell Immunohaematology	NHSBT Reference Centre	Colindale NW9 5BG
*Histocompatibility & Immunogenetics	NHSBT Reference Centre	Colindale NW9 5BG
*Haematopoetic Stem cell transplantation (patients and donors)	NHSBT Reference Centre	Colindale NW9 5BG
*Platelet Immunology	NHSBT Reference Centre	Bristol BS34 7QH
*Granulocyte mmunology	NHSBT Reference Centre	Bristol BS34 7QH

7 Microbiology and Virology (ESL Testing)

7.1 On-site Microbiology and Virology Service.

7.1.1 Most Microbiology testing is processed off-site, please refer to sections 9 and 10 below for further details.

7.1.2 The following testing is offered on-site at the ESL laboratory:

Test	**Sample Type**	**Stability for Additional Requests.**
Rapid Respiratory Testing (Covid/FluA/FluB/RSV)	Nasopharyngeal Swab Nose/Throat Swab	NA
CSF Cell Count (urgent samples only)	Universal container	NA
Ascitic Fluid Cell Count (urgent samples only)	EDTA (purple top)	NA
Urine Microscopy (urgent paediatric samples only)	Boric Acid Urine Pot	NA
Blood Culture - initial incubation only.	Blood Culture Bottles. Adult set: Aerobic Blue cap and anaerobic purple cap. Paediatric: Single bottle, silver cap.	NA

7.1.3 The on-site microbiology laboratory at the ESL can be contacted on 020 7288 5088 during routine hours, or 07920211488 out of hours.

7.1.4 For any clinical queries please contact the microbiology clinical team via switchboard.

7.2 Rapid Respiratory Testing .

7.2.1 A combined nose and throat swab collected using the MWE Virocult swabs should be sent to the laboratory for the rapid respiratory testing:

7.2.1.1 Place in specimen bag and send to the laboratory, these samples can be sent using the pneumatic tube system as this will allow for a more rapid turnaround.

7.2.1.2 Any positive samples are automatically flagged to the ICN team.

7.3 CSF Cell Count.

7.3.1 Samples must be hand delivered to the laboratory indicating this is an urgent CSF for cell count.

7.3.2 The sample is normally taken as three aliquots of 2-3 ml or more in a universal sterile container(20ml). All the aliquots are forwarded to the laboratory. Generally, the first and third (or last) sample aliquots are the most important for Microbiology. The second or middle samples are suitable for sending to other laboratories as required.

7.3.3 Cell count (white/red) is performed on the third or last aliquot of sample as it will give the most representative count.

7.3.4 If the white cell count is raised additional investigation is performed, these include gram stain and differential count. The sample will be forwarded on to the Halo Microbiology core laboratory via urgent courier once the cell count is completed.

7.3.5 If a clotted sample is received the cell count is not performed. If the total volume of CSF if <1ml the cell count will not be performed on-site. In both cases samples are immediately forwarded on to the Halo Microbiology core laboratory via urgent courier.

7.4 Ascitic Fluid Cell Count

7.4.1 Urgent requests for ascitic fluid cell count will be processed on-site.

7.4.2 A sample of the fluid should be collected in an EDTA blood tube, this helps to prevent clotting of the sample. If the sample is clotted the test will not be performed.

7.4.3 Once the cell count is completed the sample is forwarded on to the Halo Microbiology core laboratory for further testing.

7.5 Urgent Paediatric Urine Microscopy

7.5.1 Urgent requests for urine microscopy should be hand delivered to the laboratory and flagged to a member of staff as requiring urgent processing.

7.5.2 A urine samples should be taken into a sterile container ideally with Boric acid. The sample volume should not exceed 6ml with a minimum of 0.5ml.

7.5.3 Where possible all specimens should be fresh and taken before antimicrobial treatment is started.

7.5.4 Samples are then forwarded on to the Halo Microbiology core laboratory for further testing.

7.6 Blood Cultures

7.6.1 Blood cultures are essential in diagnosis and treatment of the etiologic agent of sepsis and infection. Please refer to the Trust guidance for full instruction on taking blood cultures: https://whittnet.whittington.nhs.uk/document.ashx?id=801

7.6.2 The initial incubation of blood cultures is done on-site at the ESL with a final negative report produced at 5 days if no growth is detected. An interim 36hr negative report is also produced for Paediatric requests.

7.6.3 Any samples flagging as positive are sent on to the core lab for further identification, see section 9 for core laboratory details. If a culture has a significant isolate the result will be telephoned by the medical staff to the requesting clinician and an interim report is issued.

7.6.4 Special Precautions for Blood Culture Samples:

- Prior to use, each vial should be examined for evidence of contamination such as cloudiness, bulging or depressed septum or leakage. **DO NOT USE** any vial showing evidence of contamination. A contaminated vial may contain positive pressure. If a contaminated vial is used for direct draw, gas or contaminated culture media could be refluxed into the patient's vein. Vial contamination may not be readily apparent. If a direct draw procedure is used, monitor the process closely to avoid refluxing the materials into the patient.
- Prior to use the user should examine the vial for evidence of damage or deterioration. Vials displaying turbidity, contamination, or discolouration (darkening) should not be used. On rare occasions, the glass bottleneck may be cracked, and the neck may break during removal of the flip-off cap or in handling, or the vial may not be sealed sufficiently. In these cases, the contents of the vials may leak or spill especially if the vial is inverted. If the vial has been inoculated, treat the spill or leak according to the local ward protocol.

8 Andrology

8.1 Opening times including out of hours/weekends and service details

8.1.1 The Essential Service Laboratory at Whittington hospital hosts an Andrology service.

8.1.2 Appointments can be made half-hourly from 9am to 2pm Monday to Friday. **Please note samples can only be accepted if an appointment is booked,** it is a requirement of the Human Embryology and Fertilisation Authority that only one specimen is dealt with at a time.

8.1.3 The laboratories are open between 9am-5:30pm on weekdays. Please note: the Andrology laboratory is not open on weekends.

8.1.4 Semen analysis is performed on a specimen of semen produced after a minimum of two days' and a maximum of 5 days' abstinence from sexual intercourse. A pre-produced specimen must be brought to Pathology Specimen Reception at the appointed time. It must be collected directly into a pre-weighed specimen container (provided from Specimen Reception) and maintained at body temperature (keep in trouser pocket). The specimen must be delivered to the laboratory within 1 hour of collection.

8.2 Key personnel and contact details

Key Personnel	Contact details
Andrology laboratory/Appointments line	020 7288 5088
Chris Wilson Whittington ESL manager	Chris.wilson@hslpathology.com
Sheryl Homa Consultant Andrologist and clinical lead	020 7025 7940 sheryl.homa@tdlpathology.com

8.3 Appointments

8.3.1 For GP patients the Choose and Book system is used for making appointments; the process is as follows:

- Logon to either the 'EMIS' or 'Vision' system and go to 'eReferral'
- Enter 'Gynaecology' as the speciality and 'Infertility' as the clinic
- 'Search all'
- Select 'Andrology semen testing service'

Please add a note indicating whether an infertility or post vasectomy request

8.3.2 For internal hospital appointments, a clinic referral should be made through the Medway system to the 'Fertility clinic – GL1SA' under Mr Lieberman.

8.3.3 **As above, please add a note indicating whether an infertility or post vasectomy request**

8.3.4 Please note appointments cannot be made for WEEKENDS or BANK HOLIDAYS.

Once an appointment has been made a pre-weighed and toxicity tested pot will be sent (or handed) to the patient along with a comprehensive set of instructions (available by e-mail on request). It is essential that only these pots are used for any semen analysis test.

8.4 Factors that may affect adversely affect the results of the Investigation

- Abstinence period not being adhered to can result to in lower counts.
- Incomplete sample collection can result in a lower sample volume being recorded.
- Spermicidal agents coming into contact with the sample can reduced the motility/vitality results.
- Inaccurate time written on the form/sample for the time produced can result in the wrong interpretation of the motility/vitality results.
- Improper storage of sample in transit to the laboratory (i.e. chilling) can reduce the vitality and motility results.
- Delay in transporting the sample to laboratory.
- Screw lid not secured properly resulting in sample leakage.

8.5 Post Vasectomy Samples

8.5.1 Please ensure that the patient has a request form to present with the sample – clearly stating that the request is for post vasectomy analysis (forms and comprehensive instructions are available by e-mail on request).

8.5.2 The British Andrology Society guidelines for the assessment of post vasectomy semen samples recommend that initial assessment is undertaken 12 weeks post vasectomy and after the patient has produced at least 20 ejaculates.

8.5.3 The seminal fluid is examined for the presence and absence of spermatozoa by direct microscopy within 4 hours of production, or within one hour in the case repeat samples to detect motility - should spermatozoa be present in the first sample. The whole ejaculate should be submitted to the laboratory and collected in a sterile universal container. The sample should be handed to the laboratory staff within four hours from the time it was produced - if it is the first sample, or within one hour for repeat samples.

9 Microbiology

9.1 Microbiology Core Laboratory Services.

9.1.1 Microbiology testing is all processed off site (barring those tests listed in section 3.6.2) at the Halo Microbiology Laboratory. Details of sample requirements will be shown on Ice at point of request and are printed on the request form. Further test information can be found on the HSL Microbiology website: HSL Microbiology | Health Services Laboratories

9.2 Urgent requests

9.2.1 A 24-hour service is provided for urgent requests. Requests submitted for urgent analysis must be agreed with the laboratory in advance.

9.2.2 Urgent requests need to be marked clearly on the request form.

9.2.3 Always telephone the laboratory prior to submitting urgent sample.

9.2.4 Contact ESL when sending all urgent requests to inform them of all urgent requests either in working hours on 020 7288 5088 or 07920 211488 out of Hours.

9.2.5 A limited number of tests are available for microbiology out of hours service to deal with urgent specimens where an immediate or rapid result can influence the treatment of a patient: -

- Cerebrospinal, peritoneal, ascitic or other sterile fluids
- Paediatric urines
- Other specimens in consultation with the on-call medical microbiologist

9.2.6 For the diagnosis of amoebic dysentery, fresh (still warm) 'hot stool' or rectal scrape is required. Any aspirated pus from abscesses for parasite investigations must also be submitted fresh and warm and treated as urgent. The specimen needs to be examined without delay; the sample collected must therefore be transported and rushed to the laboratory immediately. Please contact the laboratory or ESL in advance, to inform them that the sample is on its way.

9.3 Opening times including out of hours/weekends

9.3.1 The department operates a 24/7 shift system. Staff are always on site at Halo Building, including at nights, weekends and public holidays.

9.3.2 Microbiology sample reception is also open as 24/7 on all days for receipt of specimens at the Whittington ESL.

9.4 Key personnel and contact details

Key Personnel	Contact details
Consultant Microbiologist (Dr M.C. Kelsey)	020 7288 5082
Dr. J. Andrews	020 7288 3894
Registrars	020 7288 5085 (bleep 3069)
Infection Control Matron	020 7288 3661
Infection Control Office	020 7288 3261/3679
Alan Spratt Head of Department (HALO)	Via Halo call centre: 0207 307 7373
Mahrukh Kerawala, Stephen Ellam, Matthew Grayson, Pragna Patel - Lead HCS (HALO)	Via Halo call centre: 0207 307 7373
Stephen Ellam Departmental Safety Officer (HALO)	Via Halo call centre: 0207 307 7373
Andrew Clarke Quality Manager (HALO)	Via Halo call centre: 0207 307 7373

9.4.1 Clinical Microbiology Queries

- Clinical advice for Microbiology is available at all times. During core hours (Mon-Fri 09:00 – 17:00) phone: 020 7288 5085 or bleep: 3069. Out of hours contact can be made through the hospital switchboard on: 020 7272 3070.

9.5 Clinical Services offered

9.5.1 Medical staff are available to discuss cases and provide guidance on the diagnosis and management of all infectious diseases.

9.5.2 Medical staff also provide expert knowledge, direction and education in infection prevention and control and antimicrobial stewardship.

9.5.3 Close liaison is maintained with clinical colleagues through ward rounds, MDTs and antimicrobial stewardship rounds.

9.5.4 Tests offered are listed below: -

Microbiology	**General Bacteriology** Comprehensive bacteriology service, processing swabs, respiratory specimens, stools, tissues and fluid samples. Specialised bone and joint microbiology for processing of samples from orthopaedic patients Staph aureus screen from all renal dialysis patients
	Genito-urinary Microbiology Molecular detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* Diagnosis of bacterial vaginosis, *Trichomonas vaginalis, Neisseria gonorrhoea* and *Candida spp*. Analysis of sequential urine samples and prostatic secretions in the diagnosis of prostatitis

	Mycobacterial Diagnostic Service Auramine smear microscopy, Mycobacterial culture, identification and susceptibility testing. *M tuberculosis* complex PCR, Molecular detection of Rifampicin/Isoniaizid resistance.
	Molecular Diagnostic Service Universal bacterial 16s rRNA PCR Atypical respiratory PCR (*Mycoplasma pneumoniae, Legionella pneumophila* & *Chlamydophilia pneumoniae*)
	Enterics and Parasitology Identification of ova, cyst and parasites (excludes blood and tissue parasites) Detection of Faecal Pathogens using EntericBio multiplex PCR Helicobacter pylori antigen detection *Clostridium difficile* Toxin detection from stool samples (testing is done seven days a week)
	Regional Mycology Centre Regional Mycology service for London with a specialist clinical advice service Microscopy and culture for dermatophytes Susceptibility testing of significant yeasts 18s rRNA PCR (this assay is only available if approved by the microbiology consultant) Determination of triazole serum concentrations Pneumocystis jirovecii PCR Galactomannan detection Cryptococcal antigen tests
	Blood Cultures Investigation of Blood cultures. *Quick*FISH is used for the rapid identification of bacteria and yeast directly from positive blood cultures. These tests cover pathogens responsible for the majority of bloodstream infections.
	Urine Analysis Screening for the presence of nitrite and leucocyte esterase. Microscopy, culture, identification and susceptibility testing Urine antigen test for legionella and pneumococcal antigen
	Hospital Acquired Infection (HAI) service Clostridium difficile Toxin detection from stool samples (testing is done seven days a week) Rapid response to potential outbreak of infections via a dedicated section Screening multi-drug resistant bacteria - Including carbapenemase-producing Enterobacteriaceae, vancomycin-resistant enterococci and ESBL screen

9.6 Tests/Examinations offered and specimen requirements

9.6.1 A list of all UKAS accredited tests can be found on the Laboratory's Schedule of Accreditation (8860) via the link below:
https://www.ukas.com/search-accredited-organisations

9.6.2 Specimen requirements can be found on the HSL Microbiology | Health Services Laboratories and in section 9.10 below.

9.7 Factors that significantly affect the performance of the examination or interpretation of results

- Always send separate samples for multiple requests in different departments. Failure to adhere to this may result in the request being missed
- Incorrectly collected blood cultures (under/overfilled) may affect organism growth and recovery.
- Delays in transport and/or incorrectly stored samples may lead to loss of viability of some organisms and/or overgrowth of other flora.
- Storage conditions of the samples are important. Never refrigerate blood culture samples.
- Urine specimens for culture should be stored in a fridge prior to transportation to reduce the rate of multiplication of microorganisms
- Supporting information for therapeutic drug monitoring should include the name of the antimicrobial given, dose, date and time of dose, and date and time of sample. This will allow accurate interpretation of the results.
- Use of non-sterile containers
- Haemolysed, lipaemic and icteric blood samples are not suitable for all serological investigations
- Sample externally contaminated with surface flora. E.g. take clean catch urine samples to minimise contamination
- Always use aseptic technique for collection of aliquots
- Swabs with additives (charcoal, gel) cannot be used for PCR tests
- There are certain variations in laboratory test results that can be controlled for, by selecting the most appropriate time in the day for a test e.g. EMU sample for TB investigation
- False-negative result may occur in patients taking a course of antibiotics

9.8 List of Laboratories for referred investigations

9.8.1 Some examinations will be referred to other Laboratories for analysis. Information on referred examinations can be found against the applicable test.

9.8.2 A list of referral Laboratories used is listed below

LPH	Brucella Reference Laboratory, University Hospital, Liverpool
Various	Public Health England (PHE), 61 Colindale Ave, London
LSH	Liverpool School of Tropical Medicine, Pembroke Place, Liverpool
HER	Leptospira Reference Unit, County Hospital, Hereford
STH	Lyme Reference Unit, Southampton General Hospital
MAN	Meningococcal Reference Unit, Withington Hospital, Manchester
BRO	Microbiology Dept., Royal Brompton & Harefield Hospital, London
GIL	Mycology Reference unit, PHE, Myrtle Road, Bristol
CAM	Special Pathogens Reference Unit, Porton Down, Salisbury
SWA	Toxoplasma Reference Laboratory, Singleton, Swansea
Prion/CJD	The National Creutzfeldt-Jacob Disease Surveillance Unit, Western General Hospital, Crewe Rd, Edinburgh, EH14 2XU
Various	If required other TDL or HSL laboratories

9.8.3 All samples received for Creutzfeldt-Jacob Disease (CJD) testing are sent to the National Creutzfeldt-Jacob Disease surveillance unit (CJDSU) in Edinburgh. This must be by prior arrangement by the clinical team (telephone request and faxed form). The Microbiology medical staff must be alerted to the specimen so that they can inform the clinical team that they must discuss the case with CJDSU (Dr Alison Green or Dr Mary Andrews on 0131 537 3075). If testing is agreed, the CJDSU will organise a courier to pick up the sample and they will contact the laboratory in advance to arrange a suitable time for collection. The sample is stored at -20°C in the CL3 laboratory until then.

9.9 Requesting additional tests (add on requests)

9.9.1 After sample receipt: this is dependent on the retention time of the sample in the laboratory. The retention time varies for different types of clinical specimens. Please discuss the additional requests with the microbiology registrars or the laboratory.

9.10 Sample collection Instructions.

Swabs for Microbiology have some specific collection instructions, in addition to the guidance in section 2, please follow the relevant instructions below for swab collection

9.10.1 Specific Microbiology sample rejection criteria are listed below:

- Grossly leaking or broken specimen containers.
- Inadequate sample volume (>1ml essential in adult patients).
- Inappropriate sample for the test requested (see Pathology test finder)
- Ensure that date of hospital admission is recorded for enteric investigations. Stool samples from in-patients are only processed for community pathogens if taken within 72-hrs of admission. If suspected in longer-stay patients, please discuss with the microbiology doctors.
- Sputum sample >48 hrs and urine samples >72 hrs after collection are not suitable for processing
- Tissue samples received in formalin, formal saline or any other fixative is not suitable for investigation of microbiological culture.

9.10.2 Chlamydia trachomatis and Neisseria gonorrhoeae screening specimens

9.10.2.1 The table below details the tube types and the storage conditions for samples for use with the Aptima CT/GC screening assay

Note: this assay will be in use from 17/02/2025 - communications will be issued to users confirming the change, if clarification is needed please contact the laboratory.

Sample Collection Type	Previous Type	New Type	Comment
Neat / First Void Urine **Urine is the gold standard genital sample type from men.**	Standard universal container	Standard universal container NO CHANGE 	Stable at 2-30°C for 6 days
	BD urine transport tube (*black* top)	Hologic **yellow** label tube 	Stable at 2-30°C for 30 days
Self-taken Vaginal, Extra Genital or Penile Meatal Swabs **Vulvovaginal is the gold standard genital sample type from women.**	BD *purple* vaginal swab	Hologic **orange** multitest swab 	Stable at 2-30°C for 60 days
Clinician-taken Unisex Swabs *(Female Endocervical or Male Urethral)*	BD *pink* cervical swab	Hologic white / **blue** unisex swab 	Stable at 2-30°C for 60 days

9.10.2.2 Urine - These samples are stable for up to 6 days at ambient temperature in standard universal containers. If sample transport is expected to exceed 6 days, the specific Hologic yellow transport tube should be used. Users should transfer 2mL of urine into the Hologic yellow transport tube using the disposable pipette provided. The correct volume of urine has been added when the fluid level is between the black fill lines on the urine specimen transport tube label.

9.10.2.3 General instructions for all collection methods

- 1. Wash hands before starting.
- 2. In the privacy of the examination room or restroom, you will need to undress, as necessary. You will need to comfortably position yourself to maintain balance during the collection procedure.
- 3. Open kit package. Remove the swab and the tube. Set the tube aside before beginning instructions below to collect the specimen or specimens requested by your health-care provider.

WARNING: If at any time the contents of the tube are spilled on the skin, wash the affected area with soap and water. If the contents of the tube are splashed in the eyes, immediately flush eyes with water. If the contents of the tube are spilled, request a new Aptima Multitest.

9.10.3 Vaginal swab specimen collection

9.10.3.1 Before proceeding, read the patient information and general instructions in section 9.7.

9.10.3.2 Partially peel open the swab package as shown in Diagram 1. Remove the swab. Do not touch the soft tip or lay the swab down. If the soft tip is touched, the swab is laid down, or the swab is dropped, request a new Aptima Multitest Swab Specimen Collection Kit.

9.10.3.3 Hold the swab in your hand as shown in Diagram 2, placing your thumb and forefinger in the middle of the swab shaft covering the score line (black line). Do not hold the swab shaft below the score line (black line).

9.10.3.4 Carefully insert the swab into your vagina about 2 inches (5 cm) inside the opening of the vagina (as shown in Diagram 3) and gently rotate the swab for 10 to 30 seconds. Make sure the swab touches the walls of the vagina so that moisture is absorbed by the swab and then withdraw the swab without touching the skin.

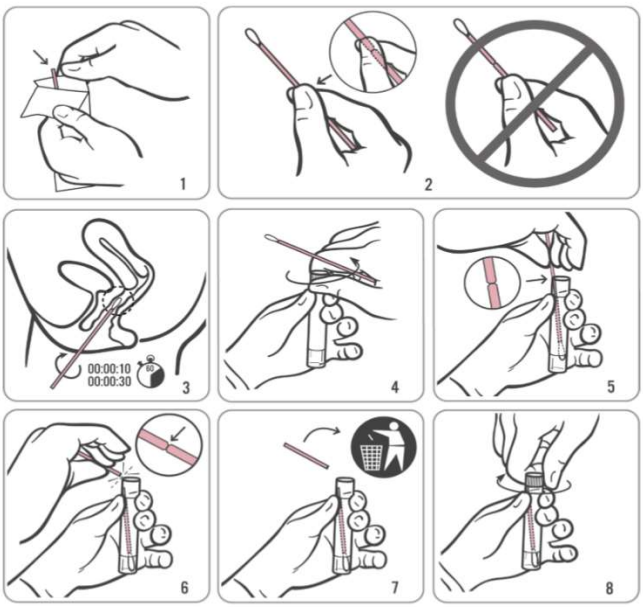
9.10.3.5 While holding the swab in the same hand, unscrew the cap from the tube as shown in Diagram 4. Do not spill the contents of the tube. If the contents of the tube are spilled, request a new Aptima Multitest Swab Specimen Collection Kit.

9.10.3.6 Immediately place the swab into the transport tube so that the score line (black line) is at the top of the tube as shown in Diagram 5.

9.10.3.7 Carefully break the swab shaft at the score line (black line) against the side of the tube as shown in Diagram 6.

9.10.3.8 Immediately discard the top portion of the swab shaft as shown in Diagram 7.

9.10.3.9 Tightly screw the cap onto the tube as shown in Diagram 8.



9.10.4

9.10.4.1 Penile meatal swab specimen collection

9.10.4.2 Before proceeding, read the patient information and general instructions above in section 9.7.

9.10.4.3 Partially peel open the swab package as shown in Diagram 1. Remove the swab. Do not touch the soft tip or lay the swab down. If the soft tip is touched, the swab is laid down, or the swab is dropped, request a new Aptima Multitest Swab Specimen Collection Kit.

9.10.4.4 Hold the swab in your hand as shown in Diagram 2, placing your thumb and forefinger in the middle of the swab shaft covering the score line (black line). Do not hold the swab shaft below the score line (black line).

9.10.4.5 See Diagram 3 if you are circumcised (no foreskin) or Diagram 4 if you are not circumcised. Uncircumcised men will have to roll the foreskin down before starting collection. Hold the penis with your free hand (hand with no swab). Using your other hand (with the swab), roll the swab just at the tip or outside the opening to the penis through which you pass urine (pee). Be sure to roll the swab completely around the opening to get the best sample. It is not necessary to put the swab deep inside the opening of the penis.

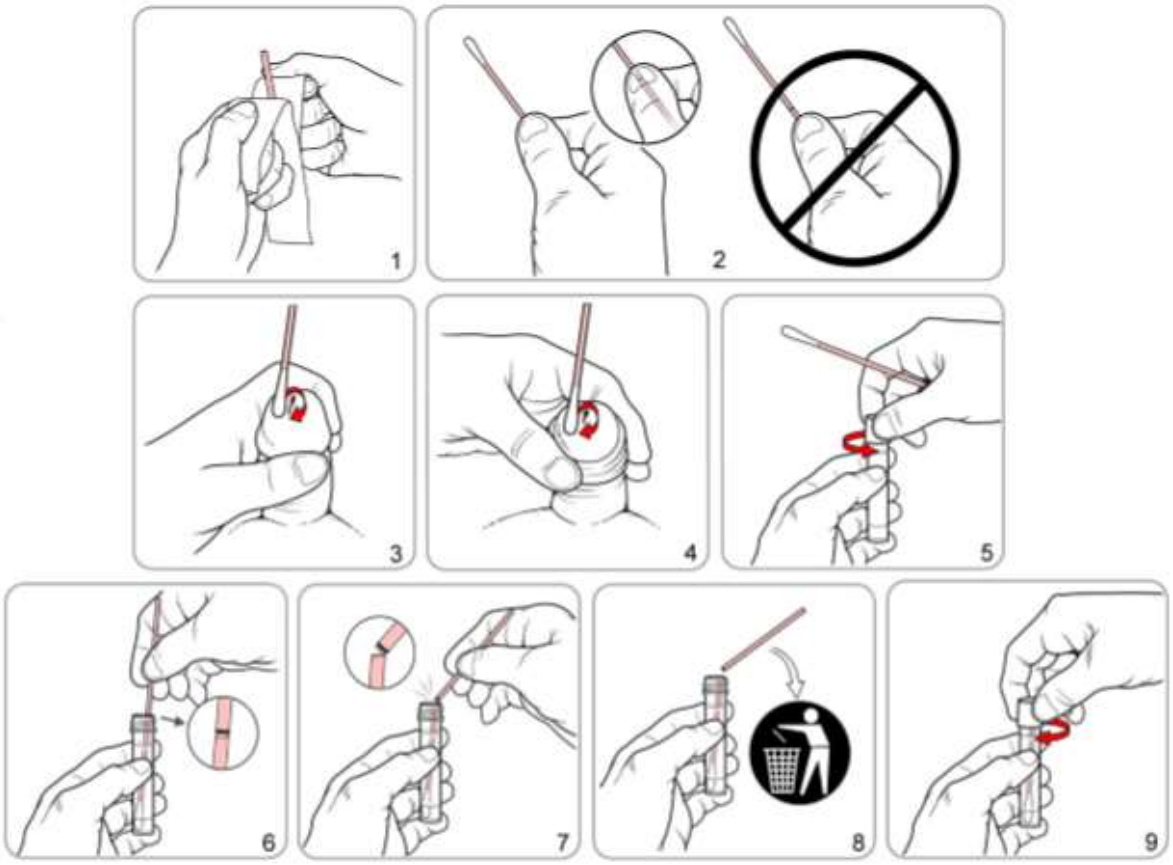
9.10.4.6 While holding the swab in the same hand, unscrew the cap from the tube as shown in Diagram 5. Do not spill the contents of the tube. If the contents of the tube are spilled, request a new Aptima Multitest Swab Specimen Collection Kit.

9.10.4.7 Immediately place the swab into the transport tube so that the score line (black line) is at the top of the tube as shown in Diagram 6.

9.10.4.8 Carefully break the swab shaft at the score line (black line) against the side of the tube as shown in Diagram 7.

9.10.4.9 Immediately discard the top portion of the swab shaft as shown in Diagram 8.

9.10.4.10 Tightly screw the cap onto the tube as shown in Diagram 9. Return the tube as instructed by your health-care



9.10.5 Rectal swab specimen collection

9.10.5.1 Before proceeding, read the patient information and general instructions in section 9.7.

9.10.5.2 Partially peel open, the swab package as shown in Diagram 1. Remove the swab. Do not touch the soft tip or lay the swab down. If the soft tip is touched, the swab is laid down, or the swab is dropped, request a new Aptima Multitest Swab Specimen Collection Kit.

9.10.5.3 Hold the swab as shown in Diagram 2, placing your thumb and forefinger in the middle of the swab shaft covering the score line. Do not hold the swab shaft below the score line.

9.10.5.4 Carefully insert the swab into your rectum about 1-2 inches (3-5 cm) past the anal margin (the outside of the anus) and gently rotate the swab for 5 to 10 seconds as shown in Diagram 3. Withdraw the swab without touching your skin.

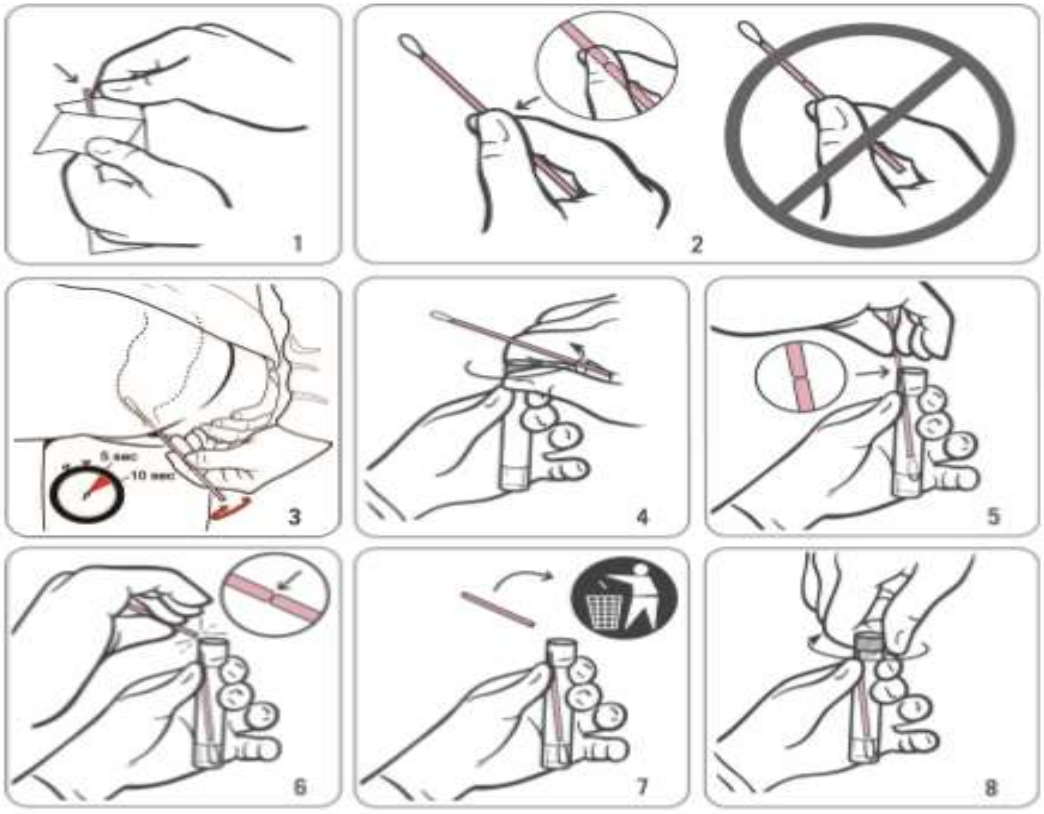
9.10.5.5 While holding the swab in the same hand, unscrew the cap from the tube as shown in Diagram 4. Do not spill the contents of the tube. If the contents of the tube are spilled, use a new Aptima Multitest Swab Specimen Collection Kit.

9.10.5.6 Immediately place the swab into the transport tube so that the score line is at the top of the tube as shown in Diagram 5.

9.10.5.7 Carefully break the swab shaft at the score line against the side of the tube as shown in Diagram 6.

9.10.5.8 Immediately discard the top portion of the swab shaft as shown in Diagram 7.

9.10.5.9 Tightly screw the cap onto the tube as shown in Diagram 8. Return the tube as instructed by your health-care provider.



9.10.6 Throat swab specimen collection

9.10.6.1 Before proceeding, read the patient information and general instructions in section 9.7

9.10.6.2 Partially peel open, the swab package as shown in Diagram 1. Remove the swab. Do not touch the soft tip or lay the swab down. If the soft tip is touched, the swab is laid down, or the swab is dropped, request a new Aptima Multitest Swab Specimen Collection Kit.

9.10.6.3 Hold the swab as shown in Diagram 2, placing your thumb and forefinger in the middle of the swab shaft covering the score line. Do not hold the swab shaft below the score line.

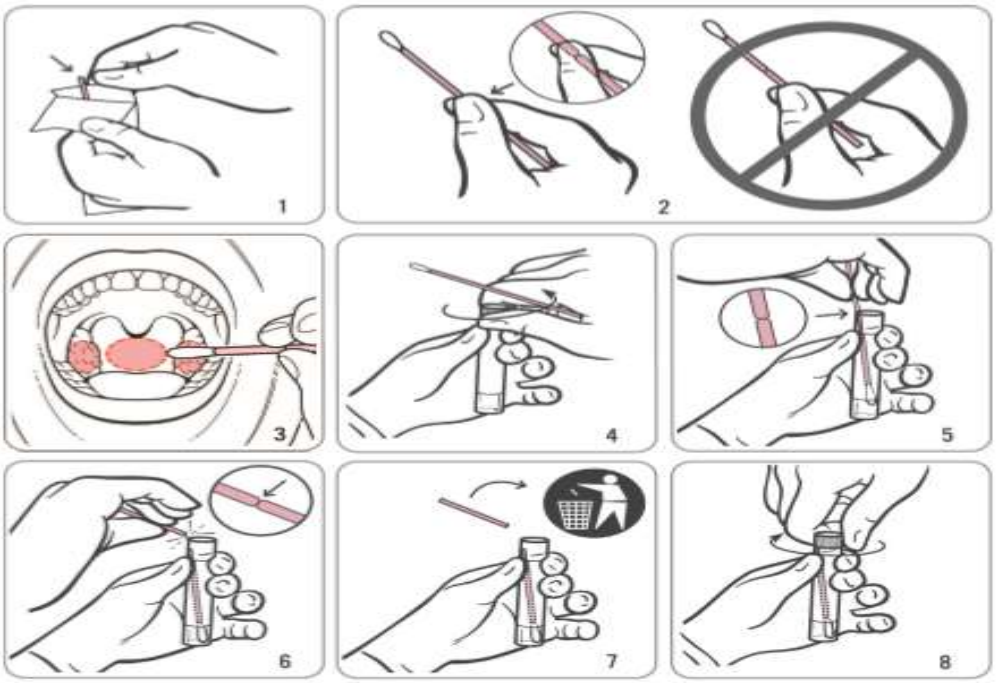
9.10.6.4 Carefully insert the swab into your mouth as shown in Diagram 3, ensuring contact with bilateral tonsils (the tonsils on both sides of your mouth, unless your tonsils have been removed) and the back of your throat, then withdraw the swab without touching the inside of your cheeks or tongue. 5. While holding the swab in the same hand, unscrew the cap from the tube as shown in Diagram 4. Do not spill the contents of the tube. If the contents of the tube are spilled, use a new Aptima Multitest Swab Specimen Collection Kit.

9.10.6.5 Immediately place the swab into the transport tube so that the score line is at the top of the tube as shown in Diagram 5.

9.10.6.6 Carefully break the swab shaft at the score line against the side of the tube as shown in Diagram 6.

9.10.6.7 Immediately discard the top portion of the swab shaft as shown in Diagram 7.

9.10.6.8 Tightly screw the cap onto the tube as shown in Diagram 8



9.10.7 Continuous Ambulatory Peritoneal Dialysis Fluid (CAPD)

The samples should be collected in a pair of BD BACTEC bottles as well as a lavender EDTA tube and a sterile universal for microscopy and cell count.

9.10.8 Ascitic fluid

The sample should be collected in a pair of BD BACTEC bottles as well as a lavender EDTA tube and a sterile universal for microscopy and cell count.

9.10.9 Joint fluid

The sample should be collected in a sterile universal as well as a lavender EDTA tube for microscopy and cell count.

9.10.10 Helicobacter pylori from gastric biopsies

Biopsies should be sent in saline in a sterile universal, the more biopsies sent improves the chance of recovery of this fastidious organism.

9.10.11 Corneal scrapings

Contact the ESL when corneal scrapings are taken, to arrange collection of appropriate agar media and microscopy slide.

9.10.12 Skin scrapings, Hair and Nail clippings for mycology

Skin scrapings, hair and nail clippings are transported to laboratory in a Dermapak envelope specifically designed for the safe and convenient handling and transportation of dermatological specimens for mycological investigations.

9.10.13 Sellotape slide for parasite investigation

A piece of clear Sellotape is placed around the perianal skin area. Place Sellotape so that it sticks flatly to a clean glass slide and place in a slide box for transport.

9.10.14 Microbiology - Blood culture

Blood cultures are essential in diagnosis and treatment of the etiologic agent of sepsis and infection.

9.10.15 Antibiotic assays

State both the timing of the dose and of the sample collection. This will allow accurate interpretation of the results. Supporting information for therapeutic drug monitoring should include the name of the antimicrobial given, dose, date and time of dose, and date and time of sample. Blood samples for Therapeutic Drug Monitoring antibiotic levels must be hand-labelled with the time and date of collection. Without this information accurate interpretation is impossible.

10 Virology

10.1 Virology Service

10.1.1 The Whittington Virology service is currently in a state of transition, with service expected to transfer to the Halo Core Laboratory from the 17 February 2025. Testing information pre-transfer is shown below, post-transfer applicable test information can be found on the HSL web page: HSL Virology | Health Services Laboratories

10.2 Sample Collection Instructions.

For Blood sample collection please see the information in section 2.3

10.3 Virology test List

10.3.1 Below is a list of the testing currently offered from the ESL Virology laboratory.

Note: From the 17/02/2025 testing on-site at the ESL will cease, samples will be booked on receipt at the ESL and samples will be transported to the Core Halo Laboratory several times per day for testing.

Virology Test	Clinical Indication/Risk Factors	Sample Type and Volume	Reference Laboratory
Adenovirus	Upper respiratory tract infection, childhood pneumonia, diarrhoea	Clotted blood 2 – 10 ml	UCLH Department of Virology Turn-around time: 2-3 weeks
Adenovirus Viral Load	Discuss with Microbiologist registrar ext.5085	EDTA 2-10 ml	UCLH Department of Virology Turn-around time: 1-2 weeks
Antenatal Screen	All pregnant women at booking are screened for Syphilis antibodies, Hepatitis B surface antigen and HIV (unless they have elected to opt out) as part of the IDPS screening programme. For more information visit: https://www.gov.uk/government/publications/infectious-diseases-in-pregnancy-screening-programme-handbook If screening is positive for Infectious diseases, a further serology test is done to confirm results. Samples are kept for 2 years; additional tests can be requested during this period. At present, testing for Toxoplasma antibodies is performed only at patient's request. It is not a current recommendation to test all pregnant women for toxoplasmosis in United Kingdom.	Clotted blood 2 – 10 ml	On Site Turn-around time: 1 – 2 working days

Virology Test	Clinical Indication/Risk Factors	Sample Type and Volume	Reference Laboratory
Cytomegalovirus	Performed after discussion with the medical staff in unexplained cases of jaundice and certain neonatal and paediatric disease as well as AIDS and transplant recipients. Deranged LFTs, Glandular fever like illness Viral isolation and early antigen detection may be more appropriate.	Clotted blood 2 – 10 ml	On Site Test Turn-around time: 1 – 3 working days
CMV PCR	Confirmation of IgM Positive Transplant patient, Severe Immunosuppression	EDTA 2-10 ml	UCLH Department of Virology Turn-around time: 1-2 weeks
Dengue fever	Dengue fever or 'break bone fever' is a viral illness that is transmitted by the day-biting, Aedes mosquitoes. The chance of contracting DF is determined by several factors including travel destination, length of exposure in endemic areas, the intensity of dengue transmission, and the season of travel. Risk is thought to be higher during periods of intense mosquito feeding activity two to three hours after dawn and during the early evening)	Clotted blood 2 – 10 ml	Rare and Imported Pathogens Laboratory Porton Down Turn-around time: 2 -3 weeks
Enterovirus antibodies (includes Coxsackie A&B, Echovirus)	Myocarditis, Pericarditis, Neurological history, Acute Disseminated Encephalitis	Clotted blood 2 – 10 ml	Epsom/Surrey
Epstein-Barr Virus	LFTs deranged, Paediatrics Patient, Monospot Negative result, Comparable history	Clotted blood 2 – 10 ml	On Site Test Turn-around time: 1 – 3 working days
EBV PCR	Transplant Patients, Severe Immunosuppression	EDTA 2-10 ml	UCLH Department of Virology

Virology Test	Clinical Indication/Risk Factors	Sample Type and Volume	Reference Laboratory
			Turn-around time: 1-2 weeks
Haemophilus influenza type B antibody	Functional Antibody assessment is useful in the assessment of immunodeficiency. In vaccines this represents a T-dependent B-cell response, not innate polysaccharide	Clotted blood 2 – 10 ml	Barts Health NHS Trust Turn-around time: 2 – 3 weeks
Hantavirus Antibody	Travel history, Severe Respiratory Infection, Haemorrhagic fever, Renal Failure	Clotted blood 2 – 10 ml	Rare and Imported Pathogens Laboratory Porton Down Turn-around time: 2 – 3 weeks
Hepatitis A IgM	Acute Hepatitis, Deranged LFT's, Travel history	Clotted blood 2 – 10 ml	On Site Test Turn-around time: 1 – 3 working days
Hepatitis A Total	This assay currently available for Sexual Health Patients (SASH), Discuss with Micro	Clotted blood 2 – 10 ml	On Site Test Turn-around time: 1 – 3 working days
Hepatitis B core Total	Screening Test	Clotted blood 2 – 10 ml	On Site Test Turn-around time: 1 – 3 working days
Hepatitis B surface antigen	History of IVDU, sexual contact, receipt of blood and blood products, dialysis, abnormal liver function test, jaundice, needle-stick injury	Clotted blood 2 – 10 ml	On Site Test Turn-around time: 1 – 3 working days
Hepatitis B surface antibodies	To check for immunity post vaccination. Test will not be performed after 2-4 months after booster or completion of the primary course of vaccination. At present, boosting is performed approximately every 5 years.	Clotted blood 2 – 10 ml	On Site Test Turn-around time: 1 – 3 working days

Virology Test	Clinical Indication/Risk Factors	Sample Type and Volume	Reference Laboratory
Hepatitis B markers	Hepatitis B markers are performed if the blood test is positive for Hepatitis B surface antigen. These includes Hepatitis B core IgM, Hepatitis B core Total, Hepatitis Be antibody, Hepatitis Be antigen. All markers are carried-out if the patient has no previous clinical history. However, if the patient has previous history not all markers will be performed.	Clotted blood 2 – 10 ml	On Site Test Turn-around time: 1 – 4 working days
Hepatitis B viral load	Hepatitis BsAg Positive cases, to monitor response to treatment Hepatitis B viral load test for Hepatitis B DNA, viral load, Genotype and Resistance Mutation	EDTA 2-10 ml	UCLH Department of Virology Turn-around time: 1-2 weeks
Hepatitis C	IVDU, receipts of blood and blood products, organ transplants, sexual contact, needle-stick injury If sample proves to be positive on screening, in house confirmation testing is performed	Clotted blood 2 – 10 ml	On Site Test Turn-around time: 1 – 3 working days
Hepatitis C viral load	In Hepatitis C Positive cases, to monitor response to treatment Hepatitis C viral load test for RNA, RNA Value, Genotype	EDTA 2-10 ml	UCLH Department of Virology Turn-around time: 1-2 weeks
Hepatitis D (Delta)	Only performed after consultation with medical staff. Infection may be acquired along with HBV (co-infection) or after HBV infection (super infection). Only if Hepatitis BsAg Positive but it won't be performed for all samples	EDTA and Serum sample submitted at the same time	UCLH Department of Virology Turn-around time: 2-3 weeks
Hepatitis E	Only performed after consultation with medical staff. It is a waterborne disease mainly transmitted by faecal-oral route. It can be fatal on pregnant women.		UCLH Department of Virology Turn-around time: 2-3 weeks

Virology Test	Clinical Indication/Risk Factors	Sample Type and Volume	Reference Laboratory
Herpes 1&2 antibody (HSV)	Not offered except for Pregnancy, Recurrent Genital Herpes and SASH samples	Clotted blood 2 – 10 ml	Manchester Virology
Herpes PCR	Type Specific Serology, Suspected Encephalitis, Diagnosis Genital or Oral Herpes	EDTA 2-10 ml	UCLH Department of Virology Turn-around time: 2-3 weeks
HHV-6 (Human herpes 6 virus)	exanthem subitum rash (roseola)	EDTA 2-10 ml	UCLH Department of Virology Turn-around time: 2-3 weeks
HTLV-1	Causes Adult T-cell Leukaemia/Lymphoma and HTLV-1 associated myelopathy. Transmitted by sexual contact, IVDU, mother to child, blood transfusion from an infected HTLV-1 donor	Clotted blood 2 – 10 ml	UCLH Department of Virology Turn-around time: 1-2 weeks
HTLV-1 PCR	Viral load measurement for diagnosis and monitoring of disease in individual patients infected with human T-lymphotropic virus types 1 & 2.	EDTA 2-10 ml	UCLH Department of Virology Turn-around time: 2-3 weeks
HIV	Screening is performed with an enzyme immunoassay (EIA). A positive test is confirmed with a second EIA using a different antigen. If both results are positive, a third test is performed for differential between HIV1 or HIV2. At this point we would request a second sample on all new cases of HIV disease to reduce the risk of laboratory or transcription errors. If there is discrepancy on initial results it will be sent to the reference laboratory for further testing	Clotted blood 2 – 10 ml	On Site Test Turn-around time: 1 – 3 working days

Virology Test	Clinical Indication/Risk Factors	Sample Type and Volume	Reference Laboratory
HIV Viral load	For monitoring disease progress and therapy. HIV Viral load test for HIV1 RNA, proviral DNA, GP agg test for HIV1, GP Agg S/CO	EDTA 2-10 ml	UCLH Department of Virology Turn-around time: 2-3 weeks
Measles IgM	Discuss with Microbiologist registrar ext.5085	Clotted blood 2 – 10 ml	Colindale
Measles IgG	Discuss with Microbiologist registrar ext.5085	Clotted blood 2 – 10 ml	On Site Test Turn-around time: 1 – 3 working days
Mumps IgM	Discuss with Microbiologist registrar ext.5085	Clotted blood 2 – 10 ml	
Mumps IgG	Discuss with Microbiologist registrar ext.5085	Clotted blood 2 – 10 ml	On Site Test
Mycoplasma PCR	Community acquired pneumonia, Atypical pneumonia	Clotted blood 2 – 10 ml	Referred to Colindale
Parvovirus	Sickle cell disease, pregnant, immunocompromised. The sample is tested for IgM and IgG, if sample is IgM POSITIVE or EQUIVOCAL it is sent to reference laboratory for confirmation	Clotted blood 2 – 10 ml	UCLH for Antibodies Colindale for PCR For Confirmation: Public Health England
Rubella IgG	To detect immunity in health care workers and women undergoing infertility treatment	Clotted blood 2 – 10 ml	On Site Test Turn-around time: 1 – 3 working days
Syphilis Serology	Sexual Health and Dementia screening The first line screening test is an EIA. Where the EIA is positive, the RPR and TPPA will be performed. The RPR may be used as a guide to activity of the disease. When	Clotted blood 2 – 10 ml	On Site Test If Syphilis Serology Markers needs confirmation

Virology Test	Clinical Indication/Risk Factors	Sample Type and Volume	Reference Laboratory
	neurological involvement is suspected and the blood serology is positive a RPR will be performed on the CSF.		referred to PHE Colindale
Toxoplasma IgM	To detect recent infection. Paediatric sample	Clotted blood 2 – 10 ml	Public Health Wales Microbiology
Toxoplasma IgG	It is a relatively rare disease in UK. Humans are infected by three major routes: swallowing food, soil or water contaminated with the faeces of infected cats, newly infected mother to the foetus, swallowing of undercooked or raw meat that contains the cyst form of the parasite.	Clotted blood 2 – 10 ml	On Site Test Turn-around time: 1 – 3 working days
Varicella Zoster Virus IgG	Antibodies are tested in health care workers and immuno-suppressed patients to assess the risk of acquiring and transmitting this highly contagious disease. Active immunisation is available. A history of chickenpox is 80% predictive Patients with chickenpox must not be sent to hospital, the risk to pregnant women and immuno-suppressed patients is very high The diagnosis is usually made clinically and only rarely is electron microscopy or viral culture required	Clotted blood 2 – 10 ml	On Site Test Turn-around time: 1 – 3 working days
Varicella Zoster Virus IgM	Discuss with Microbiologist registrar ext.5085	Clotted blood 2 – 10 ml	Epsom
West Nile Virus	Discuss with Microbiologist registrar ext.5085	Clotted blood 2 – 10 ml	Rare and Imported Pathogens Laboratory Porton Down

11 Immunology

11.1 Immunology Service

11.1.1 The Immunology service is provided from the Halo Core Laboratory, no immunology testing is carried out onsite at the ESL. In addition to the information below, specific test information can be found on the HSL website: HSL Immunology | Health Services Laboratories

11.2 Urgent requests

11.2.1 Only Anti Neutrophil Cytoplasmic Antibodies (ANCA), Myeloperoxidase (MPO), Proteinase 3 (PR3) and Glomerular Basement Membrane (GBM) are offered as urgent tests, during routine working hours.

11.2.2 Acetyl Choline Receptor autoantibodies (ACRA) may be flagged as urgent if diagnosis of myasthenia gravis/myasthenic crisis is required; particularly if considering emergency treatment with IVIG, and if monitoring during plasma exchange. This test is not performed in house but referred.

11.2.3 Urgent samples have priority and will be processed accordingly.

11.2.4 The requesting doctor must make prior arrangements with the laboratory by telephone or in person.

11.2.5 Samples should be hand delivered to ESL immediately. (A statement of 'Urgent' on the form and delivery by porters is not acceptable and will not be classified as urgent unless it has been phoned first (or brought in person), in which case it will be dealt with urgently).

11.3 Opening times including out of hours/weekends

11.3.1 1st floor Halo Building Automation Hall, Monday – Friday 08:00 – 20:00, Saturday 09:00 – 18:00

11.3.2 2nd floor Halo Building Manual Blood Sciences, Monday – Friday 08:00 – 19:00, Saturday 09:00 – 18:00

11.4 Key personnel and contact details

Key Personnel	Contact details
Dr. Magdalena Dziadzio Consultant Immunologist	07745 946 772 magdalena.dziadzio@nhs.net
Kushen Ramessur Laboratory Head of Department	020 7307 4776/ 02073077373 Ext 3215 Kushen.ramessur@tdlpathology.com
Emily Apsley Deputy HOD and Clinical Scientist	020 7307 4776/ 02073077373 Ext 3221 Emily.apsley@tdlpathology.com
Lisa Wallace Quality Manager	020 7307 4776/ 02073077373 Ext 3221 lisa.wallace@hslpathology.com
Laboratory Enquiries and results	020 7288 5087

11.5 Clinical Services offered

Immunology	**Autoimmune and Allergy** Diagnostic and monitoring service for organ specific autoimmune disease, renal and connective tissue disease, neurology, hereditary angioedema and complement deficiencies Allergy testing for asthma/rhinitis, atopic eczema, anaphylaxis, food allergy and intolerance, and other hypersensitivity diseases
	Cellular Immunology Diagnostic and monitoring service for primary and secondary immunodeficiency (CVID, HIES, XLA, CGD, HIV, renal transplantation)

11.6 Tests/Examinations offered and specimen requirements

11.6.1 A list of all UKAS accredited tests can be found on the Laboratory's Schedule of Accreditation (8169) via the link below:
https://www.ukas.com/search-accredited-organisations

11.7 Factors that significantly affect the performance of the examination or interpretation of results

- EDTA samples containing blood clots
- Failure to comply with the stability and storage requirements
- Underfilled or overfilled Quantiferon tubes

11.8 List of Laboratories for referred investigations

11.8.1 Some examinations will be referred to other Laboratories for analysis. Information on referred examinations can be found against the applicable test on the HSL Website.

11.8.2 A list of referral Laboratories used is listed below

University of Birmingham, Clinical Immunology Service, Vincent Drive, Edgebaston, Birmingham
Clinical Biochemistry, City Hospital, Dudley Road, Birmingham
H&I, NHS Blood and Transplant, Bristol
Royal United Hospital, Immunology Department (BIRD Diagnostics), Level 1 Entrances B38, Combe Park, Bath
Clinical Biochemistry and Immunology, Addenbrookes Hospital, Cambridge
Medical Biochemistry and Immunology, University Hospital of Wales, Cardiff
Haematology Department, Cameliar Botnar Laboratories, Great Ormond Street Hospital, London
Immunology Department, Camelia Botnar Laboratories, Great Ormond Street Hospital, London

Regional Molecular Genetics, Great Ormond Street Hospital, London
Regional Cytogenetics, Great Ormond Street Hospital, London
Enzyme Unit, Chemical Pathology, Great Ormond Street Hospital
Immunology Department, King's College Hospital, London
Department of Neuroimmunology, National Hospital for Neurology and Neurosurgery, London, Queen Square House
Purine Research Laboratories, St Thomas' Hospital, London
Meningococcal Reference Unit, Manchester Medical Microbiology Partnership, Manchester Royal Infirmary, Manchester
Immunology Department, The Royal Victoria Infirmary, Newcastle Upon Tyne
Haematological Sciences, Newcastle University Medical School, Newcastle Upon Tyne
Northern Molecular Genetics Service, Central Parkway, Newcastle Upon Tyne
Department of Immunology, QMC, Nottingham
Immunology Department, The Churchill Hospital, Oxford
Department of Immunology, 2nd Floor Pathology Building, 80 Newark Street, (Royal London)
Protein Reference Unit & Department of Immunology, Sheffield
Red Cell Immunohaematology Department, Trent Regional Transfusion Centre Longley Lane, Sheffield
Immunology Department, University Hospital Southampton, Hampshire

11.9 Requesting additional tests (add on requests)

11.9.1 Urgent add-on tests (Urgent Additions of ANCA, MPO/PR3, GBM only)

- For any urgent request call the help desk 0203 908 1471
- State the name of the patient, their D.O.B and Hospital number /NHS number and the sample number if you have it.
- State the test to be added on together with your contact details. If there is a valid sample available the test will be added on for to the patient sample and the sample will be processed. If a sample is not available or there is insufficient sample for processing the laboratory will call you back to inform.
-

11.9.2 Routine add-on tests

- For routine add on tests please email your request to: whh-tr.pathology@nhs.net with the patient and test details as above

11.9.3 Time limits of additional tests

Immunology	AIS tests up to 7 days
	Cellular tests less than 48 hours

12 Compliment and Complaint Procedure

12.1.1 The Laboratory is committed to consistently providing a high quality service

12.1.2 We would like to hear from you when we provide a high quality service. You can pass on your compliments by contacting the Laboratory Head of Department by telephone (see contact details under each Service).

12.1.3 We do accept from time to time that users may have cause for concern about the service. The Laboratory is committed to improving its services by listening and responding to the views of our users and therefore we encourage you, whenever standards fall below your expectations, to inform the Head of Department (see contact details under each Service) and provide us with as much relevant information as you can verbally or in writing.

12.1.4 On receipt of a complaint we will raise the complaint on our incident reporting system.

12.1.5 The Laboratory Head of Department in conjunction with the Quality Manager will investigate, identify the root cause including any necessary corrective actions to prevent the problem reoccurring.

12.1.6 We aim to address the complaint within one month, contact the complainant following the investigation to offer a full explanation, and where appropriate, advise of any action taken to improve our service.

12.1.7 Note: Complaints from patients should be directed to Patient Advice and Liaison service (PALS).

13 References

13.1 External References

- http://www.ukhcdo.org/docs/Genetic%20testing%20consent%20form.doc
- http://www.hse.gov.uk/pubns/misc208.pdf
- https://whittnet.whittington.nhs.uk/document.ashx?id=4970
- http://whqlibdoc.who.int/hq/2002/WHO_DIL_LAB_99.1_Rev.2.pdf
- http://labtestsonline.org.uk/
- https://www.gov.uk/government/collections/nhs-population-screening-programme-standards#sickle-cell-and-thalassaemia-(sct)-screening
- https://www.ukas.com/search-accredited-organisations

14 Definitions

14.1 Acronyms / Abbreviations

- HSL - Health Services Laboratories
- ESL - Essential Service Laboratory
- TAT - Turnaround time
- VHF - Viral Haemorrhagic Fever
- LLOQ - Lower limit of quantitation

15 Document Attributes

15.1 Approvals

Approver	Date	Response
Wilson, Chris	03/02/2025 11:34	Accept
Sudra, Reeya	03/02/2025 11:34	Accept

15.2 Change Details

Corrected

- P51- The Quad Covid /Flu/RSV testing instruction corrected to Nose and Throat swabs and correct swab type.
- P60 CT/GC testing - noted the swabs mentioned will be in use from 17/02/24
- P65 Typo – changed to Ascitic from Ascetic.

15.3 Related Documents

Number	Type	Title
<NO DATA>	<NO DATA>	<NO DATA>

15.4 Related Areas of Standard

Related Area of Standards
ISO15189:2022\7 Process requirements\7.2 Pre-examination processes\7.2.2 Laboratory information for patients and users

15.5 Related Departments

Related Department
HSL Group\Whittington Hospital Trust (WHT)\Andrology (AND-WHT)
HSL Group\Whittington Hospital Trust (WHT)\Biochemistry (BIO-WHT)
HSL Group\Whittington Hospital Trust (WHT)\Blood Transfusion (BTF-WHT)
HSL Group\Whittington Hospital Trust (WHT)\Couriers (COU-WHT)
HSL Group\Whittington Hospital Trust (WHT)\Haematology (HAE-WHT)
HSL Group\Whittington Hospital Trust (WHT)\Histology (HIS-WHT)
HSL Group\Whittington Hospital Trust (WHT)\Immunology (IMM-WHT)
HSL Group\Whittington Hospital Trust (WHT)\Information Technology (IT-WHT)
HSL Group\Whittington Hospital Trust (WHT)\Laboratory Support (LSO-WHT)

HSL Group\Whittington Hospital Trust (WHT)\Microbiology (MIC-WHT)
HSL Group\Whittington Hospital Trust (WHT)\Molecular Pathology (PCR-WHT)
HSL Group\Whittington Hospital Trust (WHT)\Point Of Care Testing (POCT-WHT)
HSL Group\Whittington Hospital Trust (WHT)\Sample Reception (SAM-WHT)